The corticolous *Pertusaria thwaitesii* was described in 1884 by Müller Argoviensis. Primarily coastal in Australia, it occurs in Queensland, New South Wales and Victoria to an elevation of 1200 m, and outside of Australia in Papua New Guinea and Sri Lanka. Its woody hosts in Australia include species of *Acacia*, *Albizia*, *Rhizophora*, *Casuarina*, *Eucalyptus* and *Schefflera*.
The 17th meeting of Australasian Lichenologists will be held at Manjimup, Western Australia, and surrounding selected bushland sites on Saturday and Sunday, 8–9 April, 2006.

Lichen forays to several habitat types around Manjimup (within about 70 km) will be undertaken on both Saturday and Sunday. The habitats visited will include Lake Muir and surrounds and a section of the Warren (Rooney’s Bridge), an area of jarrah forest NE of Manjimup that includes an extensive granite rock outcrop. A group dinner is planned for Saturday evening and, if desired, will be followed by an informal discussion session.

The assembly point: 9:30 a.m. on Saturday, April 8, in the front carpark of the Department of Conservation and Land Management at the corner of Brain Street and SW Highway, Manjimup.

A list of accommodation is provided covering a range of options and prices. There are many B&Bs in the surrounding area, especially towards Pemberton 30 km S of Manjimup, and plenty of wineries to sample a drop or two.

To assist with dinner logistics, you should register in advance with Ray Cranfield. If you are having problems obtaining accommodation, or if you need answers to other enquiries, please contact Ray by post at: Department of Conservation and Land Management, Science Division, Brain Street, Manjimup, WA 6258, by phone: (08)–9771–7976 (work), or e-mail: raye@calm.wa.gov.au.

Please note that a licence is required to collect flora in WA, and applications should be made prior to attending the meeting. An application form and requirements for a permit are available from CALM Wildlife Licensing Section, 17 Dick Perry Avenue, Technology Park, Western Precinct, Kensington, WA 6151. Phone Graeme Zekulich on (08)–9334–0441, or by fax: (08)–9334–0242.

If you are having problems obtaining accommodation, or if you need answers to other enquiries, please contact Ray by post at: Department of Conservation and Land Management, Science Division, Brain Street, Manjimup, WA 6258, or by fax: (08)–9334–0242. For further assistance, a list of accommodation is provided covering a range of options and prices. There are many B&Bs in the surrounding area, especially towards Pemberton 30 km S of Manjimup, and plenty of wineries to sample a drop or two.

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accommodation in Manjimup and surrounds (up to 30 km)

Manjimup:
- Kingsley Motel, phone (08)–9771–1177
- Kingston House (CALM) phone (08)–9771–7995 (cheap, self-catering)

Pemberton:
- Pemberton Hotel, phone (08)–9776–1017
- Karri Valley Resort, phone (08)–9776–2010

Other:
- Wilgarup Lodge (B&B), phone (08)–9771–991
- Perup (CALM), phone (08)–9771–7988 (self-catering, lab area available)
- Assorted other B&Bs in the area, plus caravan parks, and two other hotels/motels in Manjimup.


**Additional lichen records from Australia 56**

**John A. Elix**
Department of Chemistry, Faculty of Science,
Australian National University, Canberra, ACT 0200, Australia

Lepraria atlantica, L. atrotenometa, L. eburnea, L. obtusata, Parmotrema upretii, Phyllopsora albicans, Ph. rappiana, Ph. santensis, Ph. seinaewi, and Squamacidia janeirensis are reported as new to Australia. In addition, new site or territory records are listed for 30 other species. The new name *Phyllopsora foliata* Elix is proposed, and the new combination *Phyllopsora rappiana* (Brako) Elix is made.

**NEW RECORDS FOR AUSTRALIA**


The leprose thallus of this species is pale bluish grey to greyish cream and composed of fine powdery granular soredia. It lacks lobes, a medulla and projecting hyphae, and contains atranorin, porphyrilic acid (major), rangiformic or jankinic acid (major), norrangiformic or norjankinic acid (minor or absent). *Lepraria cacuminum* (A.Massal.) Kummerl. & Leuckert has similar chemistry, but is distinguished by the coarsely granular thallus which grows in montane, rain-exposed habitats. This species was previously known only from northern Europe (Orange 2001). A detailed description was given in this reference.

**SPECIMENS EXAMINED**

*New South Wales*. •Shingle Ridge, 5 km N of Molong along road to Yeoval, 33°04'22"S, 148°49'45"E, 955 m, on moss and soil in sheltered ledge at base of large rock in remnant Eucalyptus woodland, J.A. Elix 36007, 13.x.2005 (CANB).

*Australian Capital Territory*. •Shepherds Lookout, 13 km WNW of Canberra, 35°14'5"S, 148°58'5"E, 550 m, on porphyry rocks on dry hillside with scattered *Callitris endlicheri*, J.A. Elix 26706, 10.iv.1992 (CANB).


The leprose thallus of this species is pale blue-grey to grey-white, comprising mostly a finely sorediate-granulose crust, but with occasional short, fragile, poorly defined lobes up to 1.4 mm wide with a ±upturned margin. It is characterized by the dark bluish grey to dark brown hypothallus or tomentum on the lower surface of the lobes, which often projects slightly beyond the lobes and is visible from above, and the presence of atranorin, dechloropannarin and zeorin, and differs morphologically in forming larger, pruinose lobes, the lobulate-isidiate upper surface and the presence of lecanoric acid in the medulla. It resembles *P. tinctorum* (Despr. ex Nyl.) Hale, but differs in having a lobulate rather than isidiate upper surface. Divakar & Upreti (2003) reported this species to contain glyrophoric rather than lecanoric acid, but an examination of the type specimen showed this was incorrect. This species was previously known only from India (Divakar & Upreti 2003), and a detailed description is given in that reference.

**SPECIMENS EXAMINED**

*New South Wales*. •Jervis Bay Botanic Gardens, Lake McKenzie, 30 km SSW of Novera, 35°09'S, 150°40'E, 50 m, on sandstone rocks in dry Eucalyptus woodland, J.A. Elix 26404, 8.xi.1990 (CANB).


The leprose thallus of this species is grey-white to yellow grey, and can be diffuse or delimited with an obscurely lobed margin. The species is characterized by a medulla and projecting hyphae, and contains isoelectorial acid (major), barbatic acid (minor), and protocetraric acid (minor). *Lepraria eburnea* was previously known from Europe and North America (Orange 1997). A detailed description is given in Laundon (1992) and complemented by Orange (1997).

**SPECIMENS EXAMINED**

*Victoria*. •Result Creek, Bendoc-Orbost Road, 13 km SW of Bendoc, 37°14'S, 148°49'E, 900 m, on mosses in *Allopyrum novaehollandiae*-dominated forest beside creek, J.A. Elix 24152, 13.ii.1990 (CANB).


The thallus of *L. obtusata* is leprose throughout or composed of very fine soredia mixed with some colourless medullary hyphae, pale greenish white with a greyish yellow tinge, diffuse, unlobed, with or without an indistinct white medulla. Chemically it is characterized by the presence of obtusatic acid (major), norobtusatic acid (minor), placoacid (trace), and barbatic acid (minor or trace). It was previously known only from Europe. A detailed description is given in Tønsberg (1992).

**SPECIMENS EXAMINED**

*Victoria*. •Bendoc-Orbost Road (Gap Road), 5.5 km SW of Bendoc, 37°10'S, 148°51'E, 900 m, on dead wood in wet sclerophyll forest with *Bedfordia*, J.A. Elix 24121, 13.ii.1990 (CANB).


*Parmotrema upretii* is characterized by the large, loosely adnate thallus, the broad eciolate lobes, the lobulate-isidiate upper surface and the presence of lecanoric acid in the medulla. It resembles *P. tinctorum* (Despr. ex Nyl.) Hale, but differs in having a lobulate rather than isidiate upper surface. Divakar & Upreti (2003) reported this species to contain glyrophoric rather than lecanoric acid, but an examination of the type specimen showed this was incorrect. This species was previously known only from India (Divakar & Upreti 2003), and a detailed description is given in that reference.

**SPECIMENS EXAMINED**

*New South Wales*. •Jervis Bay Botanic Gardens, Lake McKenzie, 30 km S of Nowra, 35°09'S, 150°40'E, 50 m, on sandstone rocks in dry Eucalyptus woodland, J.A. Elix 26404, 8.xi.1990 (CANB).


*Phyllopsora albicans* is characterized by the squamulose thallus, with relatively large, ascending squamules, numerous lacinules developing from the lobe tips, the absence of isidia, and the presence of argopsin and norargopsin in the medulla. It could be confused with *P. buettneri* (Müll. Arg.) Zahlbr., but the latter species contains pannarin (or dechloropannarin) and zeorin, and differs morphologically in forming larger, pruinose squamules and circular thalli with radiating marginal squamules. *Phyllopsora albicans* was previously known from East Africa, Mauritius and Réunion (Timdal & Krog 2001). A detailed description is given in Timdal & Krog (2001).

**SPECIMENS EXAMINED**

*Queensland*. •Lannercoast State Forest, Blue Water Creek, Old Mill Road, 39 km WSW of Ingham, 18°35'45"S, 145°34'45"E, 360 m, on tree in rainforest, J.A. Elix 15580 & H. Streimann, 19.vi.1984 (CANB); •Cooroolo Logging Area, 16 km WNW of Innisfail, 17°31'S, 145°53'E, 100 m, on felled tree in rainforest, J.A. Elix 16682, 16694 & H. Streimann, 28.vi.1984 (CANB); •Kirimna State Forest, Cardwell Range, Dunn Creek, 23 km WNW of Cardwell, 18°12'S, 145°49'E, 730 m, on sapling along rainforest margin, J.A. Elix 17627, 17640 & H. Streimann, 8.vii.1984 (CANB); •Mt Spec State Forest, Paluma Range, 6 km W of Paluma, 19°01'S, 146°09'E, 920 m, on sapling in Lauraceae-Seyquonium dominated forest, J.A. Elix 20240 & H. Streimann, 18.vi.1986 (CANB); •Clarke Range, 46 km SSW of Proserpine, 20°21'S, 145°41'E, 600 m, on *Argyrodendron* in “dry” rainforest, J.A. Elix 20850 & H. Streimann, 29.vi.1986 (CANB); •Arthur Bailey Road, 9 km SSE of Ravenshoe, 17°41'S, 145°30'E, 900 m, on tree trunk in rainforest, H. Streimann 46146, 8.xii.1990 (CANB); •Big Tableland, 26 km S of Cooktown, 15°43'S, 145°16'E, 580 m, on treetop in remnant rainforest, H. Streimann 46292, 11.xii.1990 (CANB).
Phyllopsora rappiana (Brako) Elix, comb. nov.


Phyllopsora rappiana is characterized by the squamulose thallus, with relatively small to medium-sized squamules, the presence of laminal or marginal, globose to cylindrical, simple to rarely branched isidia and the presence of atranorin and parvifoliellin in the medulla. It could be confused with Ph. santensis (Tuck.) Swinsc. & Krog, but the latter species contains atranorin and norargopsin in the medulla. The incised squamules of this species are 0.3–0.5 mm wide, and develop from a pale tree trunk.


Phyllopsora santensis is characterized by the squamulose thallus, with medium-sized, adnate to ascending squamules, dense laminal or marginal, globose to cylindrical, simple to rarely branched isidia and the presence of atranorin and parvifoliellin (minor/trace). Atranorin and zeorin are often present as accessory metabolites. This species was previously known from North America, Central America and Asia (Brako 1991). A detailed description is given in Brako (1991) as Phyllopsora corallina var. santensis (Tuck.) Brako.


Phyllopsora swinscovi is characterized by the squamulose thallus, with medium-sized squamules, the presence of long, cylindrical, simple to rarely branched isidia attached to the margin of the squamules, and the presence of methyl 2,7-dichlorosporamato and methyl 2,7-dichloronorsporamate in the medulla. It could be confused with Ph. corallina (Eschw.) Mull. Arg., but the latter species contains atranorin or lacks lichen substances. This species was known previously from East Africa, Mauritius and South America (Timald & Krog 2001). A detailed description is given in Timald & Krog (2001).


The incised squamules of this species are 0.3–0.5 mm wide, and develop from a pale prothallus. They can be adnate and areolate, or overlap to form a xerostomous crust which becomes densely isidiate, or the isidia can develop directly from the prothallus. The colourless ascospores are simple or irregularly 2–3-septate and acerosic, and measure 25–45 x 2–3 µm. This species is characterized by the copious isidia and the presence of atranorin, lobacic acid and / or furmarprotocetraric acid, and a white medulla.

Squamacidia janieirensis was previously known from Central and South America and the Philippines (Brako 1989). The genus is new to Australia. A detailed description is given in Brako (1989).

SPECIMEN EXAMINED

New South Wales. • Track to Wrights Lookout, New England National Park, 72 km E of Armidale, 30°31'S, 152°24'E, 1000 m, on branches in crown of fallen tree in Nothofagus-Elaeocarpus-dominated forest, H. Streimann 47847, 5.iv.1991 (B, CANB).

NEW STATE AND TERRITORY RECORDS


This common and widespread saxicolous species shows quite significant variations in ascospore size (12–22 x 7–10 µm), but invariably contains norstictic and connerstic acids, with or without accessory atranorin and chloroatranorin. It has previously been reported from New South Wales and Queensland (McCarty 2005).

SELECTED SPECIMENS EXAMINED

Australasian Capital Territory. • Mulligans Flat, near the ACT-NSW border, 35°10'S, 149°04'E, 670 m, on shale rocks in pasture, J.A. Elix 1429, 11.xi.1975 (CANB); • Canberra Nature Park, Aranda Bushland, 4 km W of Canberra, 35°16'03"S, 149°04'40"E, 680 m, on sandstone rocks in dry Eucalyptus woodland, J.A. Elix 28732, 29.xii.2004 (CANB).

Tasmania. • Esk Highway, c. 7.7 km E of railway bridge, near Llewellyn Siding, 41°49', 147°34'E, 230 m, on dolerite in open Eucalyptus woodland with Bursaria spinosa and scattered dolerite rocks, J.A. Elix 28793 & G. Kantvilas, 9.xi.2004 (CANB).

Western Australia. • near summit of Mount Brown, 3 km SE of York, 31°53'16"S, 116°47'02"E, 295 m, on granite rocks in remnant Acacia woodland, J.A. Elix 31693, 21.iv.2004 (CANB); • near summit of Mt. Observation National Park, 20 km Mt. Observation, 31°53'45"S, 116°33'26"E, 365 m, on laterite rocks in Eucalyptus woodland with scattered Dryandra, Casuarina and Xanthorrhoea, J.A. Elix 31722, 21.iv.2004 (PERTH); • Kalbarri National Park, Murchison River Gorge, Hawkshead Lookout, 42.5 km E of Kalbarri town, 27°47'20"S, 114°28'05"E, 150 m, on sandstone rocks above gorge in dwarf Eucalyptus-Acacia woodland, J.A. Elix 33737, 3.v.2004 (CANB).

Northern Territory. • Lost City, Litchfield National Park, 37 km SW of Batchelor, 13°13'3", 130°44'E on large sandstone outcrops, E. Stocker s.n., 1.v.2005 (CANB).


This endemic species was reported previously from New South Wales and Queensland (McCarty 2005).

SPECIMEN EXAMINED

Western Australia. • 5 km E of Catamour Hill, Jurien, 30°16'17"S, 115°22'42"E, on bark of Eucalyptus marginata, 27°47'20"S, 114°28'05"E, 150 m, on sandstone rocks above gorge in dwarf Eucalyptus-Acacia woodland, J.A. Elix 33660, 2.v.2004 (PERTH).


This species was known previously from New South Wales and New Zealand (Galloway 1985, McCarty 2005).

SPECIMEN EXAMINED

Western Australia. • Kalbarri National Park, Meenarra Hill, 5 km E of Kalbarri township, 27°41'51"S, 114°13'02"E, 200 m, on limestone in Melaleuca-Acacia heath, J.A. Elix 33660, 2.v.2004 (PERTH).


This species was known previously from North and South America, southern Africa, southern Europe, New South Wales and Tasmania (Lumbsch & Elix 2003).

SPECIMEN EXAMINED

Western Australia. • Kalbarri National Park, Murchison River Gorge, Hawkshead Lookout, 42.5 km ENE of Kalbarri township, 27°47'20"S, 114°28'05"E, 150 m, on sandstone

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This species was known previously from South America, southern Africa, the Pacific (Hawaii, New Caledonia), New South Wales and Queensland (Marbach 2000, McCarthy 2005).

SPECIMENS EXAMINED

Western Australia. •Kalbarri National Park, along the road to The Loop and Z-Bend, 24 km NE of Kalbarri township, 27°37′13″S, 114°23′13″E, 210 m, on Melaleuca in low heath with emergent Melaleuca, Callitris, Eucalyptus and Acacia, J.A. Elix 33652, 2.v.2004 (CANB, PERTH); •Western Flora camp area, 20 km N of Neeabba, 29°37′30″S, 115°13′30″E, 250 m, on Melaleuca, E. McCrum WF254, 4–6.vi.2005 (CANB, PERTH).


This species was known previously from Central America, South West and South Wales (Marbach 2000, McCarthy 2005).

SPECIMENS EXAMINED

Western Australia. •Yellowline Nature Reserve, 56 km E of Southern Cross along the Great Eastern Highway, 31°16′23″S, 119°53′43″E, 410 m, on Callitris in open forest, Eucalyptus and Acacia, J.A. Elix 33695, 3.vi.2004 (CANB).


This species was known previously from Southern Australia, southern Africa, Réunion, New South Wales, Australian Capital Territory and Queensland (Marbach 2000, McCarthy 2005).

SELECTED SPECIMENS EXAMINED

Western Australia. •Gwambygine Nature Reserve, 11 km S of York, 31°58′24″S, 116°48′38″E, 595 m, on base of Casuarina, Eucalyptus, Acacia and sandstone outcrops, J.A. Elix 373719, 3.v.2004 (PERTH).

12. Lecanora melanomnna C. Knight, in Bailey, Syn. Qld. Fl. Supp. 1, 71 (1886). This endemic Australian species was known previously from Queensland and New South Wales (Lumbsch & Elix 2004, McCarthy 2005).

SPECIMENS EXAMINED

Western Australia. •West Kimberley, Gundurara Creek, 15°48′30″S; 125°42′06″E, on Albitzia lebeck on the river margin among rocks, W. O’Sullivan WODD51A pr.p., 3.vii.2001 (PERTH).

13. Lecanora symmicta (Ach.) Ach., Syn. Meth. Lich. 340 (1814). This species has a bipolar distribution, and in Australia was known previously from South Australia and New South Wales (Lumbsch & Elix 2004, McCarthy 2005).

SPECIMENS EXAMINED

Western Australia. •Drovers Cave National Park, Jurien Road, 6 km by road NE of Jurien Bay, 30°15′44″S, 115°06′43″E, 40 m, on dead Banksia in tall heath of mixed Proteaceae, J.A. Elix 28819, 6.v.2004 (CANB, PERTH); •Yardanogo Nature Reserve, 9.2 km E of Brand Highway along the Mt Adams Road, 29°24′20″S, 115°04′32″E, 40 m, on base of Banksia in Banksia-Callicarpa woodland, J.A. Elix 33918, 5.v.2004 (PERTH).

14. Lecidea capensis Zahlbr., Cat. Lich. Univ. 3, 532 (1925). This species was known previously from South Africa and New Zealand, and in Australia from New South Wales, Australian Capital Territory, South Australia and Western Australia (Rambold 1989).

SPECIMEN EXAMINED

Tasmania. •Esk Highway, c. 3 km E of railway bridge, 13.2 km NE of Campbell Town, 41°48′, 147°32′E, 220 m, on doliolite in pasture with scattered dolerite rocks, J.A. Elix 28785 & G. Kantvilas, 9.xi.2004 (HO).

15. Lecidea plana (Lahtm) Nyl., Flora 55, 552 (1872). This species was known previously from Europe, North America, South America, Japan, New Zealand and New South Wales (Rambold 1989).

SPECIMENS EXAMINED

Western Australia. •Kalbarri National Park, Rainbow Valley Walk, 6.5 km S of Kalbarri.
township, 27°45′29′′S, 114°08′19′′E, 52 m, on sandstone in coastal heath with sandstone outcrops, J.A. Elix 33690, 3.v.2004 (CANB).

16. **Lecidella carpathica** Körb., *Parerga Lichenol.* 212 (1861). This species was known previously from Europe, North America, South America, Asia, New Zealand and New South Wales (Knoph 1990, McCarthy 2005).

**SPECIMEN EXAMINED**

*Western Australia.* • near summit of Mt Observation, Mt. Observation National Park, 20 km W of York, 31°53′45″S, 116°33′26″E, 365 m, on laterite rock in *Eucalyptus* woodland with scattered *Drepana*, *Casuarina* and *Xanthorrhoea* and laterite outcrops, J.A. Elix 31725, 21.iv.2004 (CANB).


This species was known previously from Europe, South Africa, North America, South America, New Zealand and New South Wales (Knoph 1990, McCarthy 2005).

**SPECIMEN EXAMINED**

*Tasmania.* • Lower Marshes Road, c. 1 km SW of Northumbria Hill, 42°23′S, 147°15′E, 450 m, on sandstone in pasture with scattered sandstone rocks, J.A. Elix 28764 & G. Kantvilas, 9.xi.2004 (HO).


*Lepraria jackii* is characterized by the leprose-sorediate, whitish green to greyish or bluish grey thallus which lacks well-defined lobes, and by the presence of jackinic acid (major), norjackinic acid (minor), atranorin (major) and ursolic acid (minor). Zeorin, strepsilin, di-O-methylstrepsilin, fragilin and 7-chloroemodin are uncommon accessory substances. This species was previously reported from Asia, North America, Europe and Victoria (Kümmerling et al. 1995).

**SPECIMENS EXAMINED**

*New South Wales.* • Goonoo State Forest, Cashels Dam Road, 31 km SE of Gilgandra, 31°55′57″S, 148°52′17″E, 390 m, on sheltered sandstone ledge in coastal heath with sandstone outcrops, J.A. Elix 33690, 22.vi.1990 (CANB); • Lower Minyon Falls, 30 km SW of Mullumbimby, 28°37′S, 153°24′E, 150 m, on rocks in creek bed in dense subtropical rainforest, J.A. Elix 21268, 30.viii.1986 (CANB) [Det. P.M. Jørgensen].


This species was previously known from East Asia and the Pacific, and in Australia from Queensland (Jørgensen & Galloway 1992, McCarthy 2005).

**SPECIMEN EXAMINED**

*New South Wales.* • Lower Minyon Falls, 30 km SW of Mullumbimby, 28°37′S, 153°24′E, 150 m, on rocks in creek bed in dense subtropical rainforest, J.A. Elix 21268, 30.viii.1986 (CANB) [Det. P.M. Jørgensen].


In Australia this widespread tropical species was previously known from Queensland (Jørgensen & Galloway 1992, McCarthy 2005).

**SPECIMEN EXAMINED**

*New South Wales.* • 17 km W of Dorrego along the Armidale road, 30°22′S, 152°32′E, 1080 m, on bark in remnant rainforest, J.A. Elix 2357, 17.vii.1976 (CANB) [Det. P.M. Jørgensen].


This species was known previously from New Zealand, Australian Capital Territory, New South Wales, Victoria and Tasmania (Elix 1994b, McCarthy 2005).

**SPECIMEN EXAMINED**

*Western Australia.* • 8 km SSE of Manjimup on Muir Highway, 20 m in from road verge, 34°17′45″S, 116°13′38″E, on dead wood in open *Eucalyptus* micrantha-Corymbia calophylla forest, R.J. Cranfield 14056b, 9.x.1999 (PERTH).


This species was known previously from the Caribbean, India, Papua New Guinea and Queensland (Elix 2002, McCarthy 2005).

**SPECIMEN EXAMINED**

*New South Wales.* • Hanging Mountain, Hanging Mountain Forest Reserve, 24 km SW of Moruya, 36°01′5″S, 149°52′E, on rocks in open *Eucalyptus* forest with *Xanthorrhoea* on steep rock slope, J.A. Elix 25483, 20.vi.1990 (CANB).


This species was known previously from New Zealand, Asia, Africa, North America, and Macaronesia, and in Australia from New South Wales and Queensland (Elix 1994c, McCarthy 2005).

**SPECIMEN EXAMINED**

*Western Australia.* • near summit of Mount Brown, 3 km SE of York, 31°53′16″S, 116°47′07″E, 295 m, on granite rocks in remnant *Acacia* woodland with scattered *Eucalyptus* and rock outcrops, J.A. Elix 31669, 21.iv.2004 (CANB, PERTH).

26. **Phyllopsora foliata** Elix, nom. nov.


In this species the thallus is formed partly from minute areolae, which often fuse and form a continuous crust, and partly by isidia developing directly from the prothallus, with the isidia often dominating. It is characterized by the copious isidia and the lack of lichen substances. Morphologically it closely resembles *Phyllopsora furfuracea* (Pers. etc.)
Zahlbr., can be distinguished by its lack of chemistry (P. furfuracea contains homophaein = furfuraceic acid) and somewhat longer ascospores (11–18 µm cf. 7–13 µm long). The species was originally described from Queensland, but also occurs in New South Wales.

SPECIMENS EXAMINED

New South Wales. • South Coast, Maxwells Road, Nadgee State Forest, 41 km SSW of Eden, 37°25’S, 149°49’E, 230 m, on sandstone in shaded rocky area near waterfall dominated by shrubs and 32 km SE of Nowra, 35°10’S, 150°44’E, 50 m, on sandstone in shaded rocky area near waterfall dominated by shrubs and Pisonia, J.A. Elix 26341, 6.11.1990 (CANB).

27. Prototarmelia pulchra Diederich, Aptroot & Sérus., in Aptroot et al., Biblioth. Lichenol. 64, 147 (1997). This species was known previously from Papua New Guinea and the Northern Territory (McCarthy 2005).

SPECIMEN EXAMINED

Western Australia. • Korda North West Road, 10 km W of Korda, 30°48’45”S, 117°24’14”E, 340 m, Eucalyptus and Casuarina woodland with scattered Acacia and Melaleuca, on shrub, J.A. Elix 35626, 5.x.1993 (CANB). Western Australia. • Quirim Rock, Monadnocks Nature Reserve, 18 km ESE of Jarrahdale, 32°23’5”, 116°15’E, 340 m, on exposed granite, N. Sammy UIWA 1466, 10.viii.1975 (PERTH).

29. Pyxine fallax (Zahlbr.) Kalb, Biblioth. Lichenol. 88, 315 (2004). This species was previously known from New South Wales, the Australian Capital Territory, Victoria and Tasmania (McCarthy 2005).

SPECIMEN EXAMINED

Queensland. • Mt Marley, 1 km NE of Stanthorpe, 28°39’S, 151°57’14”E, 900 m, on granite in Eucalyptus-Callitris-dominated woodland with large granite outcrops, J.A. Elix 35626, 5.x.1993 (CANB).

Western Australia. • South Coast, Maxwells Road, Nadgee State Forest, 41 km SSW of Eden, 37°25’S, 149°49’E, 230 m, on sandstone in shaded rocky area near waterfall dominated by shrubs and Pisonia, J.A. Elix 26341, 6.11.1990 (CANB).

30. Pyxine rugulosa Stirr., Trans. & Proc. New Zealand Inst. 30, 396 (1898). This Australian endemic was previously known only from Queensland (McCarthy 2005).

SPECIMEN EXAMINED

Western Australia. • West Kimberley, Gundarara Creek, 15°48’30”S, 125°42’06”E, on Albizzia lebbeck along the river margin among rocks, W. O’Sullivan WODDS1B pr.p., 19.viii.2001 (PERTH).

Acknowledgements

I thank Dr Alan Orange (Cardiff) for generously providing authentic material of Lepraria atlantica and L. jackii, Dr Tor Tønsberg (Bergen) for fragments of Lepraria types, and the curators of the following herbaria for the loan of type and critical collections: BRI, CANB, QB, QLAM, H, LWU, PERTH.

References

Lepraria atlantica, nova Hedwigia 60, 457–465.
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**Umbilicaria deusta** (L.) Baung.

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**Abstract:** The bipolar lichen **Umbilicaria deusta** is reported from the Kakanui Mountains, in the first unequivocal record of the species from New Zealand and the Southern Hemisphere.

**Introduction**

The schist and greywacke mountain ranges east of the Main Divide in South Island, New Zealand, are areas of high species diversity for the lichen genus **Umbilicaria** (Frey 1936, 1949; Zahlbruckner 1941; Llano 1950; Allan 1951; Martin & Child 1972; Galloway 1985, 2006; Galloway & Sancho 2005). A recent visit to Mt Pisgah (1634 m), the highest point in the Kakanui Mountains, showed the genus to be both species-rich and particularly well-developed on schist outcrops in grassland and especially on the extensive, uncracked and boulder fields that are noteworthy features of that upland landscape, from 980 m upwards in low- and high-alpine zones (Mason 1988, Comrie 1992). Among 10 species of **Umbilicaria** collected from the area [Mt Pisgah is the type locality for **U. durietzii** Frey (Frey 1949)], the circumboreal-montane, nitrophytic species **U. deusta** is recorded unequivocally for the first time from both New Zealand and the Southern Hemisphere.

**Umbilicaria deusta** (L.) Baung., Fl. Lips., 571 (1790).


Illustrations: Llano (1950: 257, pl. 18, fig. 3); Yoshimura (1974: pl. 23, fig. 206); Jahns (1980: 219, fig. 526); Moberg & Holmásen (1982: 154); Goward et al. (1994: 128, fig. 1a); Wirth (1995a: 933, 1995b: 600, pl. 60A, fig. C); McCune & Geiser (1997: 293); Brodo et al. (2001: 702, fig. 862).

Thallus monophyllous, occasionally appearing polyphyllous, central parts flat or obscured by squamiform isidia near the umbilicus, the lobes free or somewhat over-lapping. 2–4 cm diam., rosette-forming and ±flat when young, becoming irregularly lacerate and contorted with age, margins slightly thickened, irregularly notched or incised, noticeably curled under, coarsely granular to isidiate, without rhizinomorphs, flabby and pliable when moist, rigid, cartilaginous, and brittle when dry. Upper surface deep olive-green suffused with brown when moist, dark greenish black to brown-black when dry, grey-white and granular-roughened above the umbilicus, when central parts are free of isidia, generally densely isidiate; sometimes with superficial, gill-like, basidiomata of *Clypeococcus*. Isidia minute, granular, globular at first, soon becoming flattened-squamulose, squamules irregularly lobed, 0.1–1.5 mm diam., scattered to crowded-imbricate, margins irregularly incised, concolorous with upper surface or darker. Lower surface brown-black in patches, to pale tan-awesum, often piebald, smooth to irregularly pitted or minutely and irregularly cracked in places, or split in parallel, radiating lines from umbilicus to margins, rarely with broad fenestrations, to 2 mm diam., and often with noticeable invaginations corresponding to *Clypeococcus* infections on the upper surface, but without wrinkles or ridges. Umbilicus compact, 2–3 mm diam., without radiating narrow ridges or lamellar structures. Rhizinomorphs absent. Apothecia and pycnidia not seen.

**Chemistry:** K=, KC+ red, C+ red, PD−, containing gyrophoric acid.

**Notes**: **Umbilicaria deusta** is an alpine lichen characterized by the laminal and marginal minutely granular to flattened-squamulose isidia, a character unique to the genus. It is a further addition to New Zealand’s bipolar lichen mycobionta (for recent discussions on bipolar lichens in alpine environments in New Zealand, see Galloway 2002a, 2003). A collection made by Jack Scott Thomson from Mt Torlesse in Canterbury (CHR 160089) was earlier identified as **U. deusta** by Zahlbruckner (1941), but the collection referred to is mixed, consisting of two species, mainly **U. hyperborea** and a little **U. nylanderiana**, with no evidence at all of **U. deusta** s. str. That misidentification of **U. deusta** was subsequently perpetuated for New Zealand by Martin (1986) and Martin & Child (1972), with no specimens cited against which material could be checked. The Mt Pisgah material is the first unequivocal collection of **U. deusta** from New Zealand and also from the Southern Hemisphere.

On Mt Pisgah, **U. deusta** is a rather rare lichen which grows on horizontal to weakly sloping schist surfaces receiving periodic seepage or trickling water (it has that particular ecology in the Northern Hemisphere), or on the floors of shallow overhangs where it co-occurs with the more commonly encountered **U. grisea** (characterized by marginal parasoredia). It associates with the following lichens: *Bryoria australmuntana*, *Bryoria tetracarpos*, *Rhizocarpon geographicum*, R. grande, *Sporoxtus festuca*, *Umbilicaria cylindrica*, *U. decussata*, *U. durietzii*, *U. grisea*, *U. hyperborea*, *U. nylanderiana*, *U. polyphylla*, *Usnea acromelana*, *U. ciliata*, *U. subcapillaris* and *U. torulosa*. The upper surface of all the thalli seen of **U. deusta** was infected with the characteristic, blister-like galls of the lichenicolous fungus *Clypeococcus grossus* (Galloway 2002b).

In the Northern Hemisphere, **U. deusta** is a circumboreal, mainly alpine species known from Great Britain, Europe, Scandinavia, Greenland, Svalbard, the Ukraine, Asia, Japan, and North America. It is not known from Africa, South America, New Guinea, Australia, or Antarctica.

**SPECIMEN EXAMINED**

Otago: Kakanui Mountains, Mt Pisgah, Pisgah Spur, on horizontal or shallowly inclined surfaces of schist rock outcrop in grassland, with **U. grisea**, 1230 m, 31.xii.2005, D.J. Galloway 5654 (CHR 528204).

**Acknowledgements**

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**References**


Additional lichen records from New Zealand 44.

**Roccellinastrum flavescens** Kantvilas

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Abstract: **Roccellinastrum flavescens**, formerly known from only the leafy shoots of the Tasmanian endemic conifers *Artrotaxis cupressoides* and *Diselma archeri* (Cupressaceae), is reported for the first time from living leaves of the New Zealand endemic *Libocedrus bidwillii* (Cupressaceae).

**Introduction**

A recent collection of a greenish white byssoid lichen with pink marginal apothecia from the leaves of the endemic New Zealand conifer *Libocedrus bidwillii* (Cupressaceae) was made from high-altitude forest dominated by *Nothofagus* in the Tongariro National Park in North Island, and identified as **Roccellinastrum flavescens** Kantvilas. The species, formerly regarded as a Tasmanian endemic (Kantvilas 1990, 2004), was originally described from the endemic conifer *Artrotaxis cupressoides* (Cupressaceae), and subsequently reported also from leaves of *Diselma archeri* (Cupressaceae). A description of New Zealand material is given below.


The species, formerly regarded as a Tasmanian endemic (Kantvilas 1990, 2004), was originally described from the endemic conifer *Artrotaxis cupressoides* (Cupressaceae), and subsequently reported also from leaves of *Diselma archeri* (Cupressaceae). A description of New Zealand material is given below.

**Notes**

**Roccellinastrum flavescens** is characterized by the pale green to green-white, cushion-like, byssoid thallus anchored to the substratum (living leaves of *Libocedrus bidwillii*) by cotyton threads; marginal, protruding, pale-pink, globaral apothecia are attached to the thallus with short stalks; 8-spored asci containing globose ascospores, 3–3.5 µm diam.; and protocetraric acid (Pd+ red) as the major secondary metabolite. The yellowish colour (usnic acid) reported for Tasmanian populations (Kantvilas 1990, 2004) was not seen in the New Zealand specimens. **Roccellinastrum flavescens** is an addition to New Zealand’s **Roccellinastrum** mycobista, where formerly the widespread species *R. neglectum* Hemsen & Vobis was the only species known (Hemsen et al. 1982; Galloway 1985; Kantvilas 1990, 2004; Pennycook & Galloway 2004).
The occurrence of *R. flavescens* on leaves of *Libocedrus bidwillii* in New Zealand is noteworthy, because the tree is a New Zealand endemic in the family Cupressaceae. Of the five known species of *Libocedrus*, three occur in New Caledonia and two are endemic to New Zealand (Salmon 1980). *Libocedrus bidwillii* is found on both islands of New Zealand as an emergent canopy tree in montane and subalpine forests in humid and superhumid climates. High rainfall, frequent fogs, short, cool summers, and wet organic soils characterize the sites where it predominates, and it has an altitudinal range from 250 to 1200 m (Salmon 1980, Wardle 1991, Ogden & Stewart 1995). *Arthrotaxus cupressoides* and *Diselma archeri* grow in similar habitats in Tasmania.

*Roccellinastrum neglectum*, on the other hand, is a widespread species of more catholic habitat preference in New Zealand, being known from Tutamoe in Northland at lat. 38°14’S, to Port Pegasus at the south of Stewart Island at lat. 47°13’S (Galloway 2006). *Roccellinastrum neglectum* is characterized by the soft, terete, byssoid-spongiose, richly branched lobes that are greenish white when fresh, becoming yellowish white during storage; apothecia borne mainly at the lobe tips; the frequently long, stipitate fruiting bodies; simple, bacilliform ascospores, 5–7 x 1–1.5 µm; and the presence of protocetraric and squamatic acids (Pd+ red). It colonizes bark amongst mosses and ferns in deep shade in high-rainfall forested areas, where it is found on bark, tree fern brush, vines, mosses, liverworts, and ferns (especially dead filmy ferns), or on the leaves and stems of shrubs. It is also known from Tasmania (Henssen et al. 1982; Galloway 1985, 2006; Kantvilas 1990, 2004; McCarthy 2005).

The two species can be distinguished with the following key.

1. Thallus irregularly spreading, to 8 cm diam.; of densely entangled, tubular lobes; corticolous, muscicolous, or foliicolous (on leaves of filmy ferns); ascospores bacilliform, 5–7 x 1–1.5 µm; protocetraric and squamatic acids present. .................. *R. neglectum*

1. Thallus in distinct, cushion-like clumps, 1–3 cm diam.; foliicolous (on leaves of *Libocedrus bidwillii*); ascospores globose, 2.5–5 µm diam.; protocetraric and usnic acids present. .................. *R. flavescens*

**SPECIMEN EXAMINED**
Wellington: • Tongariro National Park, Ohakune Mountain Road, Waitonga Falls Track, on living leaves of *Libocedrus bidwillii*, 8.xii.2005, Nick Martin s.n. (CHR 528311, AK 294881).

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**References**

A new species of *Lepraria* (lichened Ascomycota) from Australia

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**Abstract:** *Lepraria squamatica* Elix is described as new to science.

The lichen genus *Lepraria* Ach. is widely distributed in Australia, occurring on rocks, soil, bryophytes, bark and dead wood, and is frequently prominent in shaded habitats. Species are characterized by a powdery to granular sterile thallus for which ascomata are unknown. The margin can be diffuse or delimited, and the thallus composed of a mass of powdery or non-powdery spherical cells covered by elongated hyphae which often project outward (Laundon 1989, 1992a, b; Leuckert et al. 1993; Sipman 2004; Tønsberg 2004; Elix et al. 2005). Eight species have been recorded for Australia (McCarthy 2005), although two taxa were assigned to *Leptroloma*, a genus now regarded as a synonym of *Lepraria* (Ekman & Tønsberg 2002). A further new species is described here. 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.

*Lepraria squamatica* Elix, sp. nov.  

![Fig. 1a–c](image_url)

Thallus ut in *Lepraria multicauda* sed acidum squamaticum et acidum baeomycesicum continentem differt.  

**Etymology:** The specific epithet derives from the presence of squamatic acid in this species.

**Type here designated:** Australia, Northern Territory: Tabletop Range, Litchfield National Park, 25 km SW of Batchelor, 13°11’S, 130°50’E, 180 m, on charred wood in burnt *Eucalyptus* woodland with a dense understory of *Grevillea, Oenania* and *Acacia*, 2.vii.1991, J.A. Elix 27513, H.T. Lumbsch & H. Streimann (holotype–CANB).

Thallus lepore-sordidum, powdery, creamy white, grey-white or pale yellow-grey, forming extensive, irregularly spreading patches to 10 cm wide, or in small, irregularly roundish colonies 0.5–2 cm wide that eventually coalesce; usually delimited, well-defined lobes present, 0.2–1.0 mm wide, raised at the margin; thin or thick (up to 250 µm); medulla present or not, white, distinct only in patches; hyphae 1.5–3 µm thick; sordidum farinose, dispersed or forming a thick, continuous layer, 15–40 µm wide, commonly aggregated in roundish clumps (consoredia) 150–200 µm wide, with long projecting hyphae along the margins (up to 0.6 mm long), shorter projecting hyphae within (20–125 µm long); photobiont chlorococcoid, =spherical, with individual cells 7–12 µm diam. Hypothallus thin and white or not apparent.

**Chemistry:** Thallus surface K+ yellow, C–, Pd+ yellow; containing squamatic acid (major), baemocystic acid (major or minor), unknown fatty acid (major or minor), 3β-barbitic acid (trace), 3β-hypoamnolic acid (trace), 3β-subbaeomycesic acid (trace), 3β-subsquamatic acid (trace), picrotectoric acid (trace).

**Remarks**  
Morphologically, the species resembles *Lepraria multicauda* Aptroot in having a relatively thick, creamy white thallus, often with distinct lobate margins and long protruding hyphae. However, the two species can be readily distinguished chemically—*L. multicauda* contains squamatic acid (major), stictic acid (major or trace), constictic acid (major or minor), salazinic acid (trace), cryptostictic acid (trace), norstictic acid (trace), 3β-

di-O-methylstrepsilin (minor), strepsilin (trace), 7-O-methylstrepsilin (trace), zeorin and unknown triterpenes (Elix & Tønsberg 2004), whereas *L. squamatica* contains squamatic acid and baemocystic acid. This is the first reported occurrence in the genus *Lepraria* of the last two substances.

At present, the new species is known to occur on the trunks of trees and on dead wood and rocks in sub-tropical rainfall forest, tropical monsoon forest and open woodland from 60 m to 1400 m in eastern and northern Australia. Commonly associated species in eastern Australia include *Hypogymnia enteromorphoides* Elix, *H. pulverata* (Nyl.) Elix, *Leptogium biloculare* F. Wilson, *Nephroma cellulosum* (Sm. ex Ach.) Ach. and *Ramboldia brunnicarpa* Cantvillas & Elix, and in northern Australia, *Dirinaria amplana* (Fée), D.D. Awasthi, *Prototrematia pulchra* Diedenich, *Aptroot* & Sérus., *Pythotheca aura* Kalb & Elix, *Pyxine coccifera* (Fée) Nyl. and *Pyxine coccis* (Sw.) Nyl.

**ADDITIONAL SPECIMENS EXAMINED**

**New South Wales:** • Burrage Swamp, Mt Allyn Forest Park, 32°06′30″S, 151°25′30″E, 1000 m, rainforest, on *Acerena*, 29.vi.1988, G. Cantvillas 240/88 (HO, NSW); on *Notothagus moorei*, G. Cantvillas 249/88 (HO, NSW); • Mt William, Barrington Tops National Park, 32°04′30″S, 151°28′E, 1400 m, rainforest, on old trunk of *Notothagus moorei*, 30.vi.1998, G. Cantvillas 315/88 (HO, NSW).

**Northern Territory:** • Baroalla Creek, 19 km S of Jabiru, Kakadu National Park, 12°50′S, 132°53′E, 70 m, remnant monsoon forest beside creek in gorge, on dead wood, 25.v.1988, J.A. Elix 22549 & H. Streimann (CANB); • *Pethrick’s Rainforest*, 39 km WSW of Batchelor, 13°08′S, 130°40′E, 60 m, disturbed lowland forest with palms and *Grevillea*, on charred base of tree, 3.vii.1991, J.A. Elix 27563, H.T. Lumbsch & H. Streimann (CANB).

**Western Australia:** • King Edward River, 54 km NNW of King Edward River Station (Doongan Station), 14°54′S, 126°22′E, 280 m, *Eucalyptus*-dominated grassland with *Terminalia* and *Caloplaca* with large sandstone outcrops, on sheltered sandstone, 14.vii.1991, J.A. Elix 27966, H.T. Lumbsch & H. Streimann (CANB).

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**References**


Elix, JA; Tønsberg, T (2004): Notes on the chemistry of some lichens, including four species of *Stereocaulon*. *Graphis Scripta* 16, 43–45.


Figure 1a. *Lepraria squamatica*, J.A. Elix 27563 H.T. Lumbsch & H. Streimann (CANB). 1 mm.

Figure 1b. *Lepraria squamatica*. 2 mm.

Figure 1c. *Lepraria squamatica*. 2 mm.
The chemical diversity of Lepraria coriensis and L. usnica (lichenized Ascomycota) in Australia

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Abstract: In Australia both Lepraria coriensis and L. usnica have been shown to comprise three chemotypes, all of which contain usnic acid and zeorin as the major constituents. Chemically L. usnica can be distinguished from L. coriensis by the presence of minor amounts of the rare biphenyl contortin.

Introduction
The lichens Lepraria coriensis (Hue) Sipman and L. usnica Sipman are similar leprose-sorediate species that contain usnic acid and zeorin as major constituents. Lepraria coriensis is distinguished by having an ecorticate, crustose-leprose thallus that can form a thin to moderately thick non-areolate crust of powdery granules or, in part, to form irregular rosettes with lobed margins. The rounded “lobes”, which resemble those of Normandinia pulchella (Borrer) Nyl., are 0.5–2.0 mm wide and have a flat or more commonly raised rim (Laundon 2003, Sipman 2004). In some specimens a thin, black prothallus can be observed. Lepraria usnica, on the other hand, is distinguished morphologically by the presence of somewhat irregular (not rounded) sublobes or microscumules that rarely exceed 0.2 mm in width and lack a marginal rim. Lepraria coriensis is quite common throughout Australia, occurring on sheltered rock surfaces, dead wood, the base of trees and shrubs, over mosses or directly on soil, whereas L. usnica has a more restricted distribution, being confined to shaded rock surfaces and the bases of trees in tropical areas. Previously L. coriensis has been reported from Korea, India, China (Hong Kong, Taiwan), and Australia (Northern Territory), whereas L. usnica was known from Singapore, Indonesia, Colombia, El Salvador, Namibia, Panama, Seychelles, South Africa, Sri Lanka and Australia (Northern Territory) (Laundon 2003; Sipman 2004)

In the present work, the Australian representatives of both species are shown to occur in three distinct chemical races, but there is no confluence between the two species. Chemical constituents were identified by thin-layer chromatography (Culberson 1972, Culberson & Johnson 1982, Elix & Ernst-Russell 1990), high-performance liquid chromatography (Elix et al. 2003) and comparison with authentic samples.

Lepraria coriensis (Hue) Sipman, Herzogia 17, 28 (2004)
= Crocynia coriensis Hue, Bull. Soc. Bot. France 71, 386 (1924)
= Lecanora coriensis (Hue) J.R. Laundon, Nova Hedwigia 76, 97 (2003).

Chemotype 1: contains usnic acid (major), zeorin (major), ±isousnic acid (minor or trace), zatranorin (trace), protodehydroconstipatic acid (major or minor) and dehydroconstipatic acid (major or minor). This chemotype is most common in northern Australia.

Chemotype 2: contains usnic acid (major), zeorin (major), ±isousnic acid (minor or trace), zatranorin (minor or trace), argopsin (minor), norargopsin (minor or trace), protodehydroconstipatic acid (minor or trace) and dehydroconstipatic acid (minor or trace). This chemotype is common in southern Australia.

Chemotype 3: contains usnic acid (major), zeorin (major), ±isousnic acid (minor or trace), zatranorin (trace), caleploicin (minor) and fulgiden (minor or trace), proto-dehydroconstipatic acid (minor or trace) and dehydroconstipatic acid (minor or trace). This apparently rare chemotype has been found in New South Wales.

One specimen from Western Australia was found to contain a combination of two of the above chemotypes, i.e. it contained both argopsin and caloploicin. It is worth noting that dehydroconstipatic acid and isoumarinic acid are synonymous.

SELECTED SPECIMENS EXAMINED
Chemotype 1
Northern Territory. • Umbrawarra Gorge, 22 km SW of Pine Creek, 13°59’S, 131°41’E, 220 m, Melaleuca-dominated creek side in gorge, on sandstone, 23.v.1988, J.A. Elix 22521, 22529 & H. Streimann (CANB); • Robin Falls, 15 km S of Adelaide River township, 13°21’08”S, 131°08’22”E, 140 m, remnant monsoon forest in gorge with Melaleuca, Carallia and numerous sandstone boulders, on shaded sandstone, 7.viii.2005, J.A. Elix 28834 (CANB).
South Australia. • Flinders Ranges, Mt Remarkable National Park, Alligator Gorge, 9 km S of Wililmington, 32°45’S, 138°03’E, 400 m, Eucalyptus-Calitris woodland in ravine, on Callitris, 27.x.1984, J.A. Elix 17782 & L.H. Elix (CANB).

Chemotype 2
New South Wales. • Shingle Ridge, 5 km N of Molong along road to Yeoval, 33°04’22”S, 148°49’45”E, 595 m, remnant Eucalyptus woodland, on soil bank in creek, 13.x.2005, J.A. Elix 36006 (CANB).
South Australia. • Sandy Creek National Park, 5 km W of Lyndoch, 34°36’S, 138°56’E, Callitris woodland, on Callitris, 27.xii.1977, J.A. Elix 4184 (CANB); • Mount Lofty Ranges, The Gap, 6 km W of Palmer, 34°49’5”E, 139°10’E, 300 m, pasture, on soil, 30.viii.1987, J.A. Elix 21782 & L.H. Elix (CANB); • South Mount Lofty Ranges, along Saunders Creek, 6.5 km E of Springer, 34°42’S, 139°10’E, 300 m, pasture and dry Eucalyptus woodland with numerous rock outcrops, on soil, 1.viii.1992, J.A. Elix 33190 (B, CANB).
Western Australia. • Boyagin Rock, Boyagin Nature Reserve, 20 km NW of Pingelly, 32°28’5”E, 116°53’E, 350 m, large exposed granite outcrop, on sheltered rock ledge, 11.x.1994, J.A. Elix 40981, 40983, H.T. Lumbsch & H. Streimann (B, CANB); • Kalbarri National Park, Murchison River Gorge, trail from Ross Graham Lookout to Murchison River, 39 km ENE of Kalbarri township, 27°48’41”S, 114°28’22”E, 155 m, scattered Casuaria, Eucalyptus and Acacia with sandstone outcrops, on base of Acacia, 3.x.2004, J.A. Elix 33705 (CANB, PERTH).

Chemotype 3
New South Wales. • Goonoowoo State Forest, Cashels Dam Road, 31 km SE of Gilgandra, 31°55’57”S, 148°52’17”E, 390 m, Eucalyptus-Calitris woodland with sandstone outcrops, on sheltered sandstone ledge, 12.x.2005, J.A. Elix 36013 (CANB). Chemotype 2 + 3 Western Australia. • Depot Hill, 13 km along the Depot Hill road NW of Mingenew, 28°08’38”S, 115°21’02”E, 150 m, Eucalyptus-Acacia woodland with lateritic sandstone outcrops, on bryophytes over sandstone, 4.x.2004, J.A. Elix 33802 (CANB).

Chemotype 1: contains usnic acid (major), zeorin (major), isousnic acid (minor or trace), contortin (minor), placodiolic acid (trace), hopane-16β-diol (major or minor). The type specimen belongs to this chemotype. In Australia, this chemotype occurs in Queensland.

Chemotype 2: contains usnic acid (major), zeorin (major), ±isousnic acid (trace), contortin (minor), placodiolic acid (trace), zocrocelic acid (trace). This chemotype occurs in the Northern Territory and Western Australia.

Chemotype 3: contains usnic acid (major), zeorin (major), isousnic acid (minor or trace), contortin (minor), placodiolic acid (trace), zocrocelic acid (trace). This chemotype occurs in the Northern Territory and Western Australia. The rare biphenyl contortin was found to be a constant, albeit minor, component of all three chemotypes of L. usnica. This compound, which is biosynthetically related to usnic...
acid, was previously known only from the genus Psoroma Mich. (Elix et al. 1984). It exhibits standard TLC Rf values: Rf (A) 67; Rf (B') 41; Rf (C) 60.

SELECTED SPECIMENS EXAMINED

Chemotype 1
Queensland. • Brandy Creek Road, 12 km NE of Proserpine, 20°21'S, 148°41'E, 120 m, dry sclerophyll forest, on volcanic rocks, 28.vi.1986, J.A. Elix 20815 & H. Streimann (CANB); • between Broakneck and Quandong Creeks, 24 km WSW of Proserpine, 20°29'S, 148°22'E, 150 m, Eucalyptus-Planchonia-dominated woodland, on weathered basalt rocks, 2.vii.1986, J.A. Elix 21153 & H. Streimann (CANB).

Chemotype 2
Northern Territory. • Tabletop Range, Litchfield National Park, 25 km SW of Batchelor, 13°11'S, 130°50'E, 180 m, burnt Eucalyptus woodland with dense understorey of Grevillea, Onemia and Acacia and sandstone outcrops, on sheltered sandstone ledge, 2.vii.1991, J.A. Elix 27508, H.T. Lumbsch & H. Streimann (CANB).

Western Australia. • Kimberley Region, Donkey Escarpment, head of Donkey Creek, 27 km S of Drysdale River Station, 15°58'S, 126°22'E, 420 m, Eucalyptus woodland with Dodonaea, Callitris and Terminalia with sandstone outcrops, on sandstone, 15.vii.1991, J.A. Elix 28023, H.T. Lumbsch & H. Streimann (CANB).

Chemotype 3
Northern Territory. • Arnhem Land, 19 km WNW of Jabiru, 12°37'S, 133°03'E, 150 m, in Calopodium sil- and Buchanania arborescens-dominated deep gorge, on shaded moss platform, 19.iv.1989, H. Streimann 42252 (B, CANB).

Western Australia. • Kimberley Region, King Edward River, 54 km NNW of King Edward River Station (Doongan Station), 14°54'S, 126°12'E, 280 m, Eucalyptus-dominated grasslands with Calyptris and Terminalia, with large sandstone outcrops, on sandstone, 14.vii.1991, J.A. Elix 27962, H.T. Lumbsch & H. Streimann (CANB).

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I thank Dr Tor Tønsberg, Bergen, for providing fragments of type material and Dr Christine Cargill and Ms Judith Curnew, curators at the CANB cryptogamic herbarium, for their assistance.

References

Two new species of Tephromela (Lecanoraceae, lichenized Ascomycota) from Australia

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Abstract: Tephromela sorediata Kalb & Elix and T. stenosporonica Elix & Kalb are described as new to science. Skyttea tephranelarum, found on T. sorediata, is a new addition to the Australian mycobiota.

The lichen genus Tephromela M. Choisy is widely distributed in Australia, occurring on rocks, bark and dead wood. Species are characterized by a crustose thallus, prominent black, lecanorine or aspicilioid apothecia with a poorly developed true exciple, Bacidia-type ascii with simple, colourless ascospores and the occurrence of conidigenous cells in chains (Hafeller & Türk 2001; Hertel & Rambold, 1985; Kalb 1991, 2004; Nash et al. 2004). Six species have been recorded for Australia (McCarthy 2005), and a further two new species are described here. Chemical constituents were identified by thin-layer chromatography (Culberson 1972, Culberson & Johnson 1982, Elix & Ernst-Russell 1993), high-performance liquid chromatography (Feige et al. 1993, Elix et al. 2003) and comparison with authentic samples.

Tephromela sorediata Kalb & Elix, sp. nov.

Fig. 1 Tephromelae pertusariaulis similis sed thallo corticola vel lignicola, tenui, acidum alicer-toricum continenti et soraliis angustioribus differt.

Type here designated: Australia. Australian Capital Territory, trail to Mount Aggie, 43 km WSW of Canberra, 35°28'S, 148°46'E, 1400 m on Acacia trunk in open Eucalyptus delegatensis woodland, 17.iii.1994, J.A. Elix 40754; holo: CANB.

Thallus crustose, superficial, grey-white to pale creamy white or creamy grey, continuous, areolate to rimos, 0.05–0.15 mm thick or sometimes evanescent, up to 4 cm wide; areoles irregularly shaped to rounded, 0.2–0.8 mm wide, upper surface roughened, granular, lacking isidia; soredia present. Soralia laminal, capitulate, 0.1–0.6 mm wide, black, lecanorine or aspicilioid apothecia with a poorly developed true exciple, Bacidia-type ascii with simple, colourless ascospores and the occurrence of conidigenous cells in chains (Hafeller & Türk 2001; Hertel & Rambold, 1985; Kalb 1991, 2004; Nash et al. 2004). Six species have been recorded for Australia (McCarthy 2005), and a further two new species are described here. Chemical constituents were identified by thin-layer chromatography (Culberson 1972, Culberson & Johnson 1982, Elix & Ernst-Russell 1993), high-performance liquid chromatography (Feige et al. 1993, Elix et al. 2003) and comparison with authentic samples.

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The specimen 35099 was infected by the parasitic fungus Skyttes tephromelarium Kalb & Hatfliner, which is a new addition to the Australian mycobiota.

At present, this new species is known from scattered localities in south-eastern Australia, where it occurs on bark in montane Eucalyptus forests from 750 m to 1400 m. Commonly associated species include Fascicules australis Kanvilis var. australis, Hypogymnia pulverata (Nyl.), Elix, Maronea constans (Nyl.), Hepp, Panamira lepironia (Nyl.) PM., Jorg., Parmelia tenuirrima Hook & Taylor. Parmelina pseudorelicina (Jatta) Kantvils & Elix, Pertursia gibberosa Mull.Arg., and Usnea inermis Motyka.

ADDITIONAL SPECIMENS EXAMINED

New South Wales: • Big Badja Hill summit, 78 km S of Braidwood, 36°00’S, 149°34’E, 1360 m, on Tasmannia in wet Eucalyptus forest with exposed rock outcrops, J.A. Elix 26299, 3.viii.1991 (CANB); • near Tumamang Mountain, Tallaganda State Forest, 24 km SSE of Captains Flat, 35°38’S, 149°30’E, 1200 m, on shrubs in Eucalyptus pauciflora woodland, J.A. Elix 30010; 17.vii.1993 (CANB); • Great Dividing Range, 6 km E of Captains Flat, 22 km N of Parkers Gap, 35°37’S, 149°30’E, 1260 m, on twigs of Tasmannia in wet Eucalyptus forest, J.A. Elix 33065, 12.vii.1992, (B, CANB); • along the road to Rocky Pie, c. 10 km E of Captains Flat, 1150 m, in a humid sclerophyll forest, K. & A. Kalb 35094, 35099 & J. Elix, 5.viii.1992 (Kalb); • Barrington Tops National Park, Gloucester River, 35 km NSW of Gloucester, 32°04’S, 151°39’E, 1260 m, on branches of Acacia bartingtoniensis in Eucalyptus pauciflora woodland, D. Verdon 3729, 10.x.1978 (CANB).

Tasmannia: • South Sister, lower slope near carpark, 4.2 km NNW of St. Marys, 41°32’S, 148°10’E, 750 m, on Cytahodes gibulae among large dolerite boulders with Pittosporum, Eucalyptus, Bedfordia and Tasmannia, J.A. Elix 27040 & G. Kantvils, 10.x.2004 (CANB).

Tephromela stenosporonica Elix &Kalb, sp. nov.

Tephromelaceae atrae similis sed thallo crassiore, ascosorios elongatos laticoibusque et acido stenosporonomico, acidum colensoicum et acidum divaronicum continenti differt.


Thallus saxicolous, crustose, superficial, grey-white to yellow-grey, grey-brown or dark grey, continuous, areolate to rimose, 0.4–1.0 mm thick, up to 5 cm wide; areoles angular, irregularly shaped to rounded, 0.3–1.0 mm wide, upper surface flat and smooth to markedly convex and bullate, becoming ±white-pruinose along ridges and margins of the areolae, lacking isidia and soredia. Prothallus black, prominent between bullae and around the thallus margin or not apparent. Cortex 25–30 µm thick, algal layer c. 25–30 µm thick; algal cells 6–9 µm wide; medulla well-developed, c. 0.3–0.9 mm thick. Apothecia common, dispersed, sessile, 0.6–2.0 mm wide; disc flat, undulate or weakly convex, round, black, shiny, epruinose; thalline exciple prominent, persistent, smooth, ±folded in over disc; true exciple not apparent; epithecium violet-black, 10–20 µm thick; hymenium violet, 45–55 µm tall; hypothecium yellow to yellow-brown, 130–180 µm thick; paraphyses branched and anastomosing; apices not conspicuously swollen, 4–5 µm wide. Asci 8-spored, c. 50–60 x 10–15 µm, Baccidia-type. Ascospores broadly ellipsoid, colourless, thick-walled, 11–13 × 7–9 µm. Pycnidia common, black, immersed to slightly emergent. Conidia cylindrical to filiform, straight, 10–14 × 1 µm. Chemistry: Contains atranorin, stenosporonic acid (major), colensoic acid (minor), divaronic acid (minor), glomelliferonic acid (trace), loxodellonic acid (trace).
Western Australia: • Kununurra-Timber Creek Highway, 25 km SE of Kununurra, 15°54’S, 128°56’E, 100 m, on sandstone rocks in Eucalyptus-dominated grasslands with scattered Calatix, Ficus and Xanthostemon, J.A. Elix 27328, H.T. Lumbsch & H. Streimann, 9.vii.1991 (CANB), H. Streimann 48363, 9.vii.1991 (CANB); • Gibb River Road, 45 km SSE of Wyndham, 15°53’S, 128°14’E, 140 m, on sandstone in Eucalyptus-dominated grassland with Callicriss among rocky outcrops, J.A. Elix 28066, H.T. Lumbsch & H. Streimann, 16.vii.1991 (CANB).

Acknowledgements
We thank Dr Bill Malcolm, Nelson, New Zealand, for preparing the photographs.

References

Figure 1. Tephromela soradiata (J.A.Elix 26299 in CANB).

Figure 2. Tephromela stenosporonica (part of holotype in CANB).
On the identity of Opegrapha inalbescens, with new Australian records of Cresponea

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Abstract: Opegrapha inalbescens (Stirt.) Müll. Arg., described from Queensland in the 19th Century, is a synonym of the widespread and common Australasian lichen Cresponea plurilocularis (Nyl.) Egea & Torrente. Cresponea flavula (Vain.) Egea & Torrente is recorded from Australia (Queensland) for the first time, whereas C. plurilocularis and C. leprieurii (Mont.) Egea & Torrente are recorded from New South Wales. The occurrence of C. proximina (Nyl.) Egea & Torrente in Queensland, based on literature records, is recalled.

Introduction
The cosmopolitan, crustose lichen genus Opegrapha is poorly known but nonetheless well-represented in Australasia. The most recent Australian checklist (McCarty 2003) lists 36 names, but that does not reflect the true diversity of species present. Collections in herbaria and the author’s field observations indicate that species of Opegrapha can be found in most habitats and vegetation types, and that many additional species are yet to be identified. As well, a review of names already listed for Australia is required, because many records are likely to be based on misidentifications, or have been affected by general advances in lichen taxonomy and nomenclature.

One such name is Opegrapha inalbescens (Stirt.) Müll. Arg., based on a collection from Queensland and originally described as a Lecidea by Stirton (1881). During an ongoing study of type specimens of Australian lichens held in various European herbaria, a portion of Stirton’s type was located at the Natural History Museum, London (BM). Examination of the specimen revealed it to be the widespread species Cresponea plurilocularis (Nyl.) Egea & Torrente.

Taxonomy
Cresponea plurilocularis (Nyl.) Egea & Torrente


For additional synonyms, see Egea & Torrente (1993) and Kantvilas (2004).

This distinctive species is characterised by the following features: thallus crustose, lacking any substances detectable by t.l.c.; apothecia lecideine, black, to 1.7 mm diam., with proper margin persistent and disc concave, plane or undulate, occasionally yellowish-pruinose when young; excipulum cupulate, opaque dark brown to blackish, K+ olivaceous; paraphyses numerous, simple to sparingly branched, with apices colourless or pale yellow-brown to grey-brown; asci narrowly cylindrical, of the abietina-type (sensu Torrente & Egea 1989); ascospores fusiform, straight or occasionally curved, with rounded apices, 7–9(–10)–septate, (30–)34–42 x 4–6(–7.5) µm. For detailed descriptions see Egea & Torrente (1993) and Kantvilas (2004).

The correct taxonomic affinities of this taxon were hinted at by Rogers (1982), who noted that it was neither Lecidea nor Opegrapha, but that it might be close to Lecanactis. The genus Cresponea, which accommodates the ‘Lecanactis premnea group’ was not segregated until much later (Egea & Torrente 1993). Species of Cresponea are not easy to distinguish from each other, and their taxonomy is based mainly on the size and degree of septation of their ascospores. With respect to gross morphology, they are essentially inseparable.

James Stirton was an accomplished and prolific lichenologist who made major contributions to the lichenology of many regions of the world, including Australasia (New Zealand, Queensland, Victoria and Tasmania). He spent his working life in Scotland, and never visited the distant regions whose floras he studied, working instead on specimens provided to him by others. His Queensland material came mostly from Frederick Manson Bailey, Colonial Botanist from 1881 until 1913, whereas most of his Tasmanian and Victorian specimens were gathered by a travelling collector, Hugh Paton. His collection is housed mainly at the Glasgow Museum (GLAM), but large numbers of specimens, many of them duplicates, are lodged in the Natural History Museum in London (BM) (Rogers 1982). Stirton was a very accurate observer of lichen anatomy and morphology; as indicated by the copious notes that are found on his specimen labels (e.g. see Fig. 1) and in his papers.

Further new records of Cresponea species in Australia
1. Cresponea flavula (Vain.) Egea & Torrente
This species is readily distinguished from other Australian species of the genus by its relatively short ascospores that are 15–22(–24) x (4–)4.5–5.5 µm and only 3–4-septate (see Egea & Torrente 1993 for description). It is widespread in the tropics, occurring in Florida (Harris 1995), tropical America, the Caribbean, Africa (Kalb 2004), south-east Asia, the Pacific and New Guinea (Egea & Torrente 1993). It has not been previously cited for Australia. The single Australian specimen seen has somewhat shorter and broader ascospores, (14–)15.5–18 x 5–6 µm, but is best accommodated in this taxon pending the discovery of further material.

SPECIMEN EXAMINED
New South Wales: • Mt Wilson, on Ceratopetalum apetalum, 8.v.1988, G. Kantvilas s.n. (HO); • trail to Cathedral Creek, 33°30’S 150°23’E, epiphytic in rainforest, 1030 m alt., 20.iv.2002, G. Kantvilas 2364 (B, CANB); • Mt Wilson-Mt Irvine Road, 33°30’S 150°25’E, in cool temperate forest (Cunoniaceae-dominated), 750 m alt., 1.x.1984, H. Streimann 31641 (B, CANB); • Chaelundi State Forest, Stop-A-Bit Road, 29°58’S 152°22’E, on tree trunk in temperate forest, 820 m alt., 4.iv.1991, H. Streimann 47525 (B, CANB).

2. Cresponea leprieurii (Mont.) Egea & Torrente
This species is recognized by having ascospores (34–)38–45 x 5–7 µm, with 8–14 septa, that is, generally longer and more septate than those of C. plurilocularis (see Egea & Torrente 1993 for description). However, at the lower end of their size range, the ascospores of the two species overlap, so identifications must be based on mul-
tiple observations. The species has been recorded from Hong Kong (Aptroot & Seaward 1999), New Guinea (Egea et al. 1996), the Americas, and Queensland (Egea & Torrente 1993). The records cited below are the first from New South Wales.

SPECIMENS EXAMINED
New South Wales: •Burraga Swamp, Mt Allyn Forest Park, 32°06’30”S 151°25’30”E, on Acmena in rainforest, 1000 m alt., 29.vi.1988, G. Kantvilas 186/88 (HO, NSW); •Duck Creek Road, 22 km WNW of Buladelah, 32°21’S 151°58’E, on tree trunk, 140 m alt., 22.iv.1990, H. Streimann 43992 (B, CANB).

3. Cresponea proximata (Nyl.) Egea & Torrente
This species is not included by McCarthy (2003), although a specimen from Queensland is cited by Egea & Torrente (1993). It has also been recorded from the Caribbean, South America, South-East Asia, the Pacific (Egea & Torrente 1993) and New Guinea (Egea et al. 1996). On the basis of published accounts (Egea & Torrente 1993, Messuti & Ferraro 2002) and the single specimen examined, the species is distinguished from the superficially similar C. plurilocularis by having slightly shorter asco-spores, 25–38(–40) x 5–7(–7.5) µm with only 5–7(–8) septa.

SPECIMEN EXAMINED
Queensland: •Clarke Range, 46 km SSW of Proserpine, 20°49’S 148°29’E, on sapling in “dry” rainforest with Argyrodendron spp., 600 m alt., 29.vi.1986, J.A. Elix 20901 & H. Streimann (CANB).

Acknowledgments
I thank Jean Jarman for producing the photographs. I also acknowledge with thanks the curators of the Australian National Herbarium (CANB) and the Natural History Museum (BM) for the loan of material, and in particular Scott LaGreca for his patience in dealing with overdue loans.

References
Notes on *Placopsis albida* (Kremp.) I.M. Lamb (Ascomycota: Agyriaceae) from Java and New Ireland, Papua New Guinea.

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**Abstract:** *Placopsis albida* (Kremp.) I.M. Lamb, is a palaeotropical species first described from Java. It is here recorded also from New Ireland, Papua New Guinea.

The lichen genus *Placopsis* (Nyl.) Linds. is characteristic of highly oceanic, cool temperate biomes, with the Southern Hemisphere being the region of greatest species diversity (Lamb 1947; Galloway 2001a, 2001b, 2002, 2004a, 2004b, 2006; Galloway et al. 2005). During an ongoing study of *Placopsis* in New Zealand, and especially of the widespread and polymorphic species *P. perrugosa* (Nyl.) Nyl., specimens of *P. albida* (Kremp.) I.M. Lamb from the Pacific tropics were investigated to check similarities and differences with *P. perrugosa*. Specimens of *P. albida* from Java and New Ireland were obtained on loan from B, BM, M and UPS. Thin-layer chromatography of acetone extracts and HPLC of methanol extracts was performed according to standardized methods (Culberson 1972, Feige et al. 1993).


The holotype specimen consists of two small pieces of rock (each c. 3–4 cm diam.) glued to a piece of paper to which is attached Krempelhuber’s diagnosis in pencil, plus a very neat and accurate pencil drawing of an 8-spored ascus, three paraphyses, and three photobiont cells. Krempelhuber’s spore measurements are “0.0178–0.018 mm long., 0.0097–0.010 mm lat.”. In the protologue, Nylander cites Krempelhuber’s spore measurements as “0.018–0.025 mm x 0.010–0.012 mm” (Nylander 1863). On the outside of the packet, Krempelhuber has added the comment “potius *Psoroma*” to his name *Squamaria albida* Kremp., suggesting that he thought the lichen might be better accommodated in *Psoroma*.

Thallus closely attached in small rosettes or irregular patches, (1–)2–5 cm diam., lobate-crustose centrally, or often with several discrete layers of small lobes or elongate squamules forming a loosely interlocking or interdigitating crust, or becoming confluent and ±continuous, marginal lobes when well developed projecting 8–15 mm beyond the main thallus. Prothallus ochraceous to dark brown, fibrous, between squamules centrally and sometimes visible at margins, especially when marginal lobes are abraded. Lobes 220–380 µm thick, marginal lobes flat to shallowly convex, 10–15(–25) mm long and 1–1.5 mm wide, discrete to contiguous, centrally much shorter, 1–5 mm long and 0.2–0.8 mm wide, appearing elongate-squamulose, complex and often densely imbricate, sometimes minutely lobulate. Upper surface grey-green to pale olive-green and ±white-maculate (10x lens) when moist, grey-white to pale fawnish or creamish when dry, matt or slightly glossy in parts, smooth to minutely furrowed or wrinkled or plicate, occasionally minutely cracked, and often with small, flattened...
lobules; isidia, pruina, pseudocyphellae, and soredia absent. Medulla white. Photobiont green, chlorococcoid, cells spherical, 6.5–8.5(–10) µm diam. Cephalodia dark purple-blue when moist, pale pinkish ochre when dry, widely scattered, sessile, conspicuously raised above the thallus surface, 0.5–3 mm diam., globose, discrete, smooth at first, becoming irregularly lobed, rosette-forming at maturity, strongly and deeply wrinkled or sometimes divided by deep cracks; cyanobiont Scytonema, in chains, cells laterally compressed, 3–5 µm diam. Apothecia sessile, constricted at base, laminal, mostly towards centre of the thallus, rounded, discrete, 2–3 together and irregular through mutual pressure, 0.2–1(–2) mm diam. Thalline exciple prominent, entire, smooth to minutely papillate, obscuring disc at first, 0.1–0.2 mm thick at maturity, concordant with thallus. Proper exciple very thin, persistent, entire, slightly raised above disc, paler than disc. Disc shallowly urceolate to plane, smooth to slightly wrinkled or roughened, pale pinkish brown, translucent when moist, pale to dark red-brown when dry, with or without a thin, ochraceous pruina. Epithecium olive-brown to pinkish brown, 15–25 µm thick, unchanged in K. Hymenium colourless (145–160–210–235) µm tall. Hypothecium opaque, pale yellow-brown, unchanged in K, 200–335 µm thick. Asci cylindrical, 8-spored, 135–150 x 10–12 µm. Ascospores uniseriate in a row, broadly ellipsoid, apices rounded or pointed, brown, 13.5–18(–23) x (6.5–8–10(–12) µm. Pycnidia widely scattered, immersed in thalline squamules or projecting as small, globose warts, 100–300 µm diam., concolorous with thallus, with a dark brown, apical, depressed ostiole. Conidia filiform, straight to shallowly curved, 15–25(–30) x 0.5–1 µm.

**Chemistry.** Thallus K-, C+ red, KC+ red, PD-, containing gyrophoric acid (major), lecanoric acid (minor) and atranorin (trace).

**Notes**

*Placopsis albida* is characterized by an orbicular to irregularly spreading thallus having round to square lobes (often minutely nerved), with a margin (marginally) imbricately arranged centrally and with flattened, elongated marginal lobes extending for 8–15 mm beyond the main thallus. Thalli are commonly fertile, but lack isidia, pruina, pseudocyphellae and soredia. Cephalodia are sessile, conspicuously raised above the thallus surface, 0.5–3 mm diam., globose, discrete, smooth at first, becoming irregularly lobed, rosette-forming at maturity and then strongly and deeply wrinkled or sometimes divided by deep cracks. Apothecia are scattered, mainly solitary, central, with a prominent thalline exciple concolorous with the thallus, shallowly urceolate to plane discs that are pale to dark red-brown and with or without a thin, ochraceous pruina. The hymenium is colourless, 145–235 µm tall, and the ascospores broadly ellipsoidal, 13.5–18(–23) x (6.5–8–10(–12) µm. It has a secondary chemistry of gyrophoric acid (major), lecanoric acid (minor) and atranorin (trace).

*Placopsis albida* possibly is a palearctic species (Galloway 1996), known initially from Java (Lamb 1947) and now also from New Zealand. Very likely it is also present on high ground elsewhere in Papua New Guinea, although reports to date from that region extend for 8–15 mm beyond the main thallus. Thalli are commonly fertile, but lack isidia, pruina, pseudocyphellae and soredia. Cephalodia are sessile, conspicuously raised above the thallus surface, 0.5–3 mm diam., globose, discrete, smooth at first, becoming irregularly lobed, rosette-forming at maturity and then strongly and deeply wrinkled or sometimes divided by deep cracks. Apothecia are scattered, mainly solitary, central, with a prominent thalline exciple concolorous with the thallus, shallowly urceolate to plane discs that are pale to dark red-brown and with or without a thin, ochraceous pruina. The hymenium is colourless, 145–235 µm tall, and the ascospores broadly ellipsoidal, 13.5–18(–23) x (6.5–8–10(–12) µm. It has a secondary chemistry of gyrophoric acid (major), lecanoric acid (minor) and atranorin (trace).

**SPECIMENS EXAMINED**

**Java:** • Prenger. Mt Gede, c. 2600 m, 6.x.1927, Van Leeuwen-Reijerstraat 11551 (UPS); • Pasoeume, Mt Kawi, c. 2850 m, 15.v.1929, Van Leeuwen-Reijerstraat 12234 (UPS).

**Papua New Guinea:** Bismarck Archipelago, New Ireland: • Nanuanu, Hans Meyer Range, 2225 m, on scre, M. Sands, G. Pattison & J. Wood 2367 (BM 8247).

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**References**

Aptroot, A; Diederich, P; Sérusiaux, E; Sipman, HJM (1997): Lichens and lichenicolous fungi from New Guinea, *Bibliotheca Lichenologica* 64, 1–220.


The genus Plectocarpon was established by the Strasbourg pteridologist, cryptogamist, Professor of Botany, and cleric Antoine Laurent Apollinaire Fée (1789–1874) in his celebrated Essai sur les cryptogams des écorces exotiques officinales (Fée 1825). However, Fée himself did not realize that it was a lichenicolous fungus, and another 159 years passed before its true identity was recognized and the generic name re-entered modern mycological systematics.

I still vividly remember my excitement in discovering Delise’s splendidly preserved specimen of “Sticta delisea” (Delise 1825a), which is where the modern story of Plectocarpon begins. The type specimen (Hawksworth & Galloway 1984, Galloway & James 1986) is a collection of what is now known as Pseudococcylaria glabra infected with a lichenicolous fungus forming apothecia-like galls on its upper surface. When the Delise specimens which I had requested on loan arrived at the BM, I showed that intriguing specimen of P. glabra to David Hawksworth, and we agreed to collaborate on material that had implications for Plectocarpon Fée, for the genus Lichenomyces Trevis. (Trevisan 1853), and also for the typification of Delise’s Sticta delisea (Delise 1825a), which is where the modern story of Plectocarpon begins. The type specimen (Hawksworth & Galloway 1984, Galloway & James 1986) is a collection of what is now known as Pseudococcylaria glabra infected with a lichenicolous fungus forming apothecia-like galls on its upper surface. When the Delise specimens which I had requested on loan arrived at the BM, I showed that intriguing specimen of P. glabra to David Hawksworth, and we agreed to collaborate on material that had implications for Plectocarpon Fée, for the genus Lichenomyces Trevis. (Trevisan 1853), and also for the typification of Delise’s Sticta delisea (Delise 1825a), which is where the modern story of Plectocarpon begins.

The genus Plectocarpon was established by the Strasbourg pteridologist, cryptogamist, Professor of Botany, and cleric Antoine Laurent Apollinaire Fée (1789–1874) in his celebrated Essai sur les cryptogams des écorces exotiques officinales (Fée 1825). However, Fée himself did not realize that it was a lichenicolous fungus, and another 159 years passed before its true identity was recognized and the generic name re-entered modern mycological systematics.

I still vividly remember my excitement in discovering Delise’s splendidly preserved specimen of “Sticta delisea” (Delise 1825a), which is where the modern story of Plectocarpon begins. The type specimen (Hawksworth & Galloway 1984, Galloway & James 1986) is a collection of what is now known as Pseudococcylaria glabra infected with a lichenicolous fungus forming apothecia-like galls on its upper surface. When the Delise specimens which I had requested on loan arrived at the BM, I showed that intriguing specimen of P. glabra to David Hawksworth, and we agreed to collaborate on material that had implications for Plectocarpon Fée, for the genus Lichenomyces Trevis. (Trevisan 1853), and also for the typification of Delise’s Sticta delisea (Delise 1825a), which is where the modern story of Plectocarpon begins.

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Fée (1825) described the new genus Delisea (honouring his friend and fellow cryptogamist Dominic François Delise [1780–1814], a distinguished retired major of the French Army and Chevalier of the Legion d’Honneur), on lichen material collected from King Island in Bass Strait between Tasmania and Australia (the collection is discussed in detail in Galloway & James [1986]). It differed from any species of Sticta then known in the peculiar structure of what Fée considered to be its apothecia. For the specific epithet of his new genus, he chose pseudosticta (Fée 1825) and provided a colour illustration of it (Fée 1825). However, Delisea Fée is a later homonym of Delisea pseudosticta as Fée considered it to be and, a subsequent name, Delisea pseudosticta Fée, is conspecific, and mentioned that Santesson had earlier intimated that an undescribed species also occurred on Neopnora antarctica from southern South America. That implicated the new described Plectocarpon as a co-evolved parasite on Pseudocyphellaria, Lobaria, and Neopnora. Later, Galloway (1997) mentioned Sticta caliginosa as being “…commonly infected with Plectocarpon sp. .” underlining the association of Plectocarpon with taxa in the Peltigeraeae, families Lobariaceae and Neopnoraaceae (Eriksson 2005). Santesson (1993) synonymized Epiphyllia Nyl. with Plectocarpon, making two new combinations in the genus, bringing the known species to five, to which Diederich and Elayo (1994) added a further five species from northern Hemisphere collections. Aptroot et al. (1997) described two new species from Papua New Guinea, Wedin & Hafellner (1998) transferred Arthonia limitae into Plectocarpon, and a new species was described from Canada and Russia (Ertz et al. 2003), one from North America (Hafellner et al. 2002), and one from Chile (Follmann & Werner 2003). Today, 22 years after the modern resurrection of Plectocarpon as a name for a genus of lichenicolous fungi, we have a world monograph of the genus authored by Damien Ertz, Claude Christnacht, Mats Wedin, and Paul Diederich, who bring together for the first time a view of the genus expanded both taxonomically and geographically, with the great riches of recent collections from the Amazonian region. They demonstrate that Plectocarpon is most species-rich at last adequately researched and documented. The monograph accepts 32 species in Plectocarpon, 15 of them newly described. The genus is well-represented and speciose in the cool temperate Southern Hemisphere, with 10 species recorded from southern South America and seven from Australasia. Eight species are known from northern parts of the Northern Hemisphere, four are reported from Papua New Guinea, and three are recorded from Macaronesia, continental Africa, and Réunion. Plectocarpon is not known from Antarctica, Greenland, the Pacific Ocean, Mexico, or Central America, nor from the whole of Asia except for Russia and Turkey.

Plectocarpon currently accepted from Australia, with P. pseudosticta (the generitype) being known from Tasmania, New Zealand, and Chile, P. gallowayi (an Australasian species transferred from Melaspilos), and five newly described species, namely P. bunodophorii (on Bunodophoron patagonicum and known from New South Wales, Tasmania, and New Zealand), P. concentricum (on Pseudocyphellaria homoeophylla apparently endemic to New Zealand), P. gallowayi (on Pseudocyphellaria homoeophylla and P. multiflora, and apparently endemic to New Zealand); P. sticticola (Sticta caliginosa, S. flix, S. squamata, and S. subacperata, and apparently endemic to New Zealand, although some years ago the late Geoff Bratt discovered galls on a Tasmanian collection of “Dendrisicosorus”, leading him to write to me that he had found fertile Dendrisicosorus!”); P. baxleri (Pseudocyphellaria rubella and also apparently endemic to New Zealand).

Plectocarpon as discussed in the monograph comprises lichenicolous, stromatic Roccellaceae (Arthoniales) with more or less carbonized, multilocular stromata, many of which produce apothecia-like galls. The generic delimitation, especially with respect to Opegrapha-like taxa, is still unclear and needs resolution. Many species of Plectocarpon are restricted to Peltigeraeaeae, families Lobariaceae and Nephromataceae, and apparently endemic to New Zealand), P. sticticola (Sticta caliginosa, S. flix, S. squamata, and S. subacperata, and apparently endemic to New Zealand, although some years ago the late Geoff Bratt discovered galls on a Tasmanian collection of “Dendrisicosorus”, leading him to write to me that he had found fertile Dendrisicosorus!”); P. baxleri (Pseudocyphellaria rubella and also apparently endemic to New Zealand), P. sticticola (Sticta caliginosa, S. flix, S. squamata, and S. subacperata, and apparently endemic to New Zealand, although some years ago the late Geoff Bratt discovered galls on a Tasmanian collection of “Dendrisicosorus”, leading him to write to me that he had found fertile Dendrisicosorus!”); P. baxleri (Pseudocyphellaria rubella and also apparently endemic to New Zealand).
Although the monograph is comprehensive in scope and detail, one gets the impression that it is far from the final word, and in several places the authors hint at areas deserving further study, with fascinating vistas of speculation and co-evolution in both Plectocarpon and the Lobiaceae to be explored in the future. I hope that this excellent and timely compilation will be both a guide and a stimulant to such studies in the near future. It is a fine addition to the growing literature of lichenicolous fungi, but more than that it offers some solid pointers to new research agendas, which I hope will be quickly taken up. From a Southern Hemisphere perspective, it is a solid achievement and a particularly welcome development. Congratulations to all concerned with its production.

References
Aptroot, A; Diederich, P; Sérusiaux, E; Sipman, HJM (1997): Lichens and lichenicolous fungi from New Guinea. Bibliotheca Lichenologica 64.


Sandtessor, R; Moberg, R; Nordin, A; Tönsberg, Y; Vitikainen, O (2004): Lichen-forming and lichenicolous fungi of Fennoscandia. Museum of Evolution, Uppsala University, Uppsala.
