

# Australasian Lichenology

Number 70, January 2012 ISSN 1328-4401

# Australasian Lichenology

Number 70, January 2012 ISSN 1328-4401



*Xanthoparmelia semiviridis* produces no rhizines on its lower surface, and remains unattached in its windy, semi-arid habitat. When it dries out, it curls up into a ball resembling a miniature tumbleweed, and blows away in the wind. As it bounces along, it sheds tiny fragments that can travel a long distance away. Within only minutes of being wet up again by rain or dew, the balls uncurl and re-launch their photosynthesis (see the photograph on the front cover). Such wind-dispersed footloose lichens, because they're "of no fixed abode" and "always on the move", have been termed vagrant (or vagant), derived from the Latin *vagari*, meaning "to roam".

1 mm 

---

## CONTENTS

---

ADDITIONAL LICHEN RECORDS FROM AUSTRALIA Elix, JA (74).....	3
ADDITIONAL LICHEN RECORDS FROM NEW ZEALAND Galloway, DJ; Ledingham, J (48).....	14
ARTICLES	
Fryday, AM; Knight, A—A new species of <i>Megalaria</i> (Ramalinaceae, lichenized Ascomycota) from South Island, New Zealand .....	26
Blanchon, D; de Lange, P; Bannister, J—Confirmation of <i>Ramalina microspora</i> Kremp. (Ramalinaceae, Ascomycota) for the Kermadec Islands .....	30
BOOK REVIEW	
Galloway, DJ—REVIEW of <i>Nordic Lichen Flora, Volume 4, Parmeliaceae</i> , edited by Arne Thell and Roland Moberg .....	36
RECENT LITERATURE ON AUSTRALASIAN LICHENS .....	38

## Additional lichen records from Australia 74

John A. Elix

Research School of Chemistry, Building 33,  
Australian National University, Canberra, A.C.T. 0200, Australia

Ten species, *Botryolepraria lesdainii* (Hue) Canals, Hern.-Mariné, Gómez-Bolea & Llimona, *B. neotropica* Kukwa & Pérez-Ortega, *Clauzadea immersa* (Hoffm.) Hafellner & Bellem., *Cratiria melanochlora* (Kremp.) Marbach, *Diploicia africana* (Tuck.) Matzer, H.Mayrhofer & Rambold, *Diploctoma venustum* Körb., *Herpothallon albidum* (Fée) Aptroot, Lücking & G.Thor, *Micarea albournii* Coppins, *Phyllopsora lividocarpa* Timdal and *Psoroma buchananii* (C.Knight) Nyl., are reported as new to Australia. In addition, new state or territory records are listed for 31 other taxa, and the new combination *Megalania bryophila* (Müll.Arg.) Elix is made.

### NEW RECORDS FOR AUSTRALIA

1. ***Botryolepraria lesdainii*** (Hue) Canals, Hern.-Mariné, Gómez-Bolea & Llimona, *Lichenologist* **29**, 339 (1997)

This species was known previously from Europe, Asia, Africa, North and South America and Macaronesia (Orange & Laundon 2009). It is characterized by the spongy, blue-green byssoid thallus, the hyphae forming a network and the absence of soredia, photobiont cells in clusters at the end of hyphal branches and the presence of 6 $\alpha$ -acetoxypopane-22-ol (lesdainin). Species of *Lepraria* differ in having true soredia and the occurrence of compounds other than lesdainin. A detailed description is given in Orange & Laundon (2009).

#### SPECIMEN EXAMINED

*Tasmania*: • Buxton River, in gorge near old weir, 42°15'S, 147°59'E, 30 m, on soil in a sheltered cleft on a shaded dolerite cliff, *G. Kantvilas* 271/08, 12.viii.2008 (HO). Determined by G. Kantvilas.

2. ***Botryolepraria neotropica*** Kukwa & Pérez-Ortega, *Mycol. Progr.* **9**, 347 (2009)

This species was known from South America, the Caribbean and Africa (Kukwa & Pérez-Ortega 2009; Kukwa 2011). It is characterized by a green, byssoid or granular thallus and the production of zeorin as the major secondary substance. It can also contain minor or trace quantities of up to four other triterpenes. A detailed description is given in Kukwa & Pérez-Ortega (2009).

#### SPECIMENS EXAMINED

*Queensland*: • Bunya Mountains National Park, trail to Paradise Falls, 26°52'23"S, 151°34'49"E, 1010 m, on moist rocks and soil bank in rainforest, *J.A. Elix* 38173, 38174, 38176, 6.v.2005 (CANB).

3. ***Clauzadea immersa*** (Hoffm.) Hafellner & Bellem. in J. Hafellner, *Beih. Nova Hedwigia* **79**, 322 (1984)

This species was known previously from calcareous rocks in Europe, North America, Macaronesia, Africa and Asia (Gilbert & Hawksworth 2009). It is characterized by the whitish grey to grey immersed thallus, apothecia in pits, dark red-brown to black discs 0.2–0.5 mm wide, which are often grey-white-pruinose, simple, colourless,  $\pm$ ellipsoid ascospores 10–19  $\times$  6–9  $\mu$ m with a perispore up to 1  $\mu$ m thick (often becoming granular in old spores) and the absence of lichen substances. A detailed description is given in Gilbert & Hawksworth (2009).

#### SPECIMENS EXAMINED

*South Australia*: • 3 km S of Murray Bridge, small rise overlooking River Murray, 35°07'35"S, 139°17'09"E, 20 m, on limestone in pasture with limestone outcrops and

*Muehlenbeckia florulenta*, J.A. Elix 43998, 24.v.2010 (CANB); • Boundary Road, 10 km N of Tailem Bend, 35°10'18"S, 139°27'57"E, 20 m, on limestone in remnant mallee *Eucalyptus* woodland, J.A. Elix 44004, 3.vi.2010 (CANB).

**4. *Cratiria melanochlora*** (Kremp.) Marbach, *Biblioth. Lichenol.* **74**, 183 (2000)

This species was known previously from South America, Papua New Guinea and the Hawaiian Islands (Marbach 2000). It is characterized by the yellow-white to yellow-grey thallus, the yellow-pruinose apothecia, the comparatively large, 1-septate ascospores, 16–23 × 7–11 µm, the K– excipulum and by the presence of arthothelin and thuringione. It contains arthothelin (major), thuringione (major or minor), 4,5-dichloronorlichexanthone (minor), ±6-*O*-methylarthothelin (minor), ±thiophanic acid (trace), ±3-*O*-methylthiophanic acid (trace), ±norstictic acid (minor or trace), ±connorstictic acid (trace). A full description is given in Marbach (2000).

SPECIMENS EXAMINED

*Queensland*: • Coochiemudlo Is, Moreton Bay, on mangrove, J.A. Elix 10230, 1982 (CANB); • Kurramine Beach, just N of Caravan Park, 17°46'31"S, 146°06'35"E, 1–2 m, on *Rhizophora* in mangroves and strand vegetation, J.A. Elix 38342, 38349, 30.vii.2006 (CANB).

*New South Wales*: • Limeburners Creek Nature Reserve, Queens Head area, 15 km S of Crescent Head, 31°19'09"S, 152°58'05"E, 5 m, on dead branch in coastal scrub with *Casuarina* and palms, J.A. Elix 43583, 43587, 7.viii.2008 (CANB).

**5. *Diploicia africana*** (Tuck.) Matzer, H. Mayrhofer & Rambold, *Nordic J. Bot.* **17**, 433 (1997)

This species was previously known from South Africa and North America (Matzer *et al.* 1997). It is characterized by the subcrustose, placodioid thallus with distinctly plicate margins, the lack of soredia, the black to brown-black lecideine apothecia, large *Dirinaria*-type ascospores, 13–20 × 6–10 µm, and the presence of diploicin (major), dechlorodiploicin (minor), ±canesolide (minor), ±unknown secalonic acids (major, minor or trace). A detailed description is given in Matzer *et al.* (1997).

SPECIMENS EXAMINED

*Australian Capital Territory*: • Booroomba Rocks, 11 km SW of Tharwa, 35°34'S, 148°59'E, 1360 m, on sheltered granite rocks in subalpine heath, J.A. Elix 6169, 6169a, 11.vii.1979 (CANB).

**6. *Diplotomma venustum*** Körb., *Parerga Lichenol.* **179** (1860)

This species was previously known from Europe, North America, north Africa and Asia, where it occurs on calcareous rocks (Bungartz *et al.* 2007). It is characterized by its thick, chalky, subeffigurate thallus, apothecia that erupt from the thallus with a thalline collar, 3-septate ascospores and the lack of lichen substances. The closely related *D. alboatrum* (Hoffm.) Flot. is distinguished by having submuriform ascospores. A detailed description is given in Bungartz *et al.* (2007), as *Buellia venusta*.

SPECIMENS EXAMINED

*South Australia*: • Murray Basin district, Ridley Conservation Park, 18 km S of Swan Reach, 34°38'S, 139°34'E, 30 m, on limestone rocks in mallee scrub, J.A. Elix 2204, 19.v.1976 (CANB); • Boundary Road, 17 km N of Tailem Bend, 35°06'40"S, 139°27'55"E, 50 m, on limestone in remnant mallee *Eucalyptus* woodland, J.A. Elix 43809, 43810, 43811, 18.iv.2009 (CANB).

*Tasmania*: • Bass Strait, Flinders Island, 'The Quoin', c. 1.5 km SE of summit of Mt Killiecrankie, 39°49'22"S, 147°52'17"E, 3100 m, on calcarenite in rough pasture, J.S. Whinray 4572, 27.v.2006 (HO).

**7. *Herpothallon albidum*** (Fée) Aptroot, Lücking & G. Thor, *Biblioth. Lichenol.* **99**, 28 (2009)

This species was previously known from Central and South America, the Caribbean, Southeast Asia (Vietnam) and Vanuatu (Aptroot *et al.* 2009). It is characterized by the pale grey to olive-green, byssoid thallus, a blue-green hypothallus, fluffy, pseudo-isidioid outgrowths on the upper surface and the presence of psoromic and 2'-*O*-demethylpsoromic acids. A detailed description is given in Aptroot *et al.* (2009).

SPECIMEN EXAMINED

*Queensland*: • Daintree National Park, Myall Beach, Dubuji boardwalk, 3 km S of Cape Tribulation, 16°05'27"S, 145°27'47"E, 6 m, on base of tree in coastal rainforest, J.A. Elix 43973, 29.vii.2006 (CANB).

**8. *Micarea albornii*** Coppins, *Lichenologist* **31**, 559 (1999)

*Micarea albornii* is characterized by the thin, pale greenish grey to glaucous grey, crustose thallus, with a ±cracked upper surface, numerous black, adnate, convex to subglobose apothecia, sometimes with an adhering thalline collar, simple, ellipsoid to ovoid ascospores, 7–10 × 4–6.5 µm, a partially dull olive to green-brown pigmented hymenium (K+ violet) and by the absence of lichen substances. It was known previously from South Africa, and a detailed description is given in Coppins (1999). Determined by P. Czarnota.

SPECIMEN EXAMINED

*New South Wales*: • Gibraltar Range State Forest, 50 km E of Glen Innes, 29°36'06"S, 152°10'52"E, 1020 m, on consolidated soil in wet *Eucalyptus* forest with *Cyathea* understorey, J.A. Elix 37510, 2.v.2005 (CANB, M).

**9. *Phyllopsora lividocarpa*** Timdal, *Lichenologist* **40**, 353 (2008)

*Phyllopsora lividocarpa* is characterized by a green to greenish grey, squamulose thallus, numerous lacinules developing terminally on the squamules, dense pale brown to grey or dark grey apothecia, acicular ascospores, 21–33 × 1.5–2 µm, and by the presence of 2'-*O*-methylhyperlatolic acid (major), 2'-*O*-methylsuperlatolic acid (major), 2'-*O*-methylperlatolic acid (minor), confluent acid (trace) and an unknown fatty acid (minor). It was previously known from Peru. A detailed description is given in Timdal (2008).

SPECIMEN EXAMINED

*Queensland*: • Mossman Gorge National Park, 6 km W of Mossman, 16°28'21"S, 145°19'54"E, 60 m, on rocks along the river bank in tropical rainforest along Mossman River, J.A. Elix 43040, 2.v.2005 (CANB).

**10. *Psoroma buchananii*** (C. Knight) Nyl., *Flora* **69**, 328 (1886)

*Psoroma buchananii* is characterized by the thick, spreading, conrescent, yellow-brown to dark red-brown or grey-black thallus of swollen, hummocky squamules, occasional to frequent sessile to subpedicellate apothecia, 1–10 mm wide with matt, red-brown, weakly to markedly convex discs and a conspicuous crenate-striate to verrucose-areolate thalline exciple, ellipsoid to subspherical ascospores, 15–22 × 10–15 µm, the absence of lichen substances and by the terricolous habit. It was previously known from New Zealand, the South Orkney Islands, South Shetland Islands and James Ross Island (Galloway 2007). A detailed description is given in Galloway (1985).

SPECIMEN EXAMINED

*New South Wales*: • Kosciuszko National Park, Guthega Road, 0.5 km E of Diggers Creek, 36°22'S, 148°30'E, 1560 m, on soil in crevice of granite boulders in open subalpine *Eucalyptus pauciflora* woodland, J.A. Elix 1721, 21.i.1976 (CANB). Determined by A. Elvebakk.

## NEW STATE AND TERRITORY RECORDS

### 1. *Amandinea punctata* (Hoffm.) Coppins & Scheid., *Lichenologist* 25, 343 (1994)

In Australia this cosmopolitan species has been reported from Queensland, the Australian Capital Territory, Victoria, Tasmania and Western Australia (McCarthy 2011).

#### SPECIMEN EXAMINED

*New South Wales*: • Cookamidgera State Forest, 3.5 km SSW of Cookamidgera, 33°13'43"S, 148°16'54"E, 345 m, on dead stump in *Eucalyptus* woodland, *J.A. Elix* 39073, 4.viii.2008 (CANB).

### 2. *Austroparmelina subarida* (Elix) A.Crespo, Divakar & Elix, *Syst. Biodiv.* 8, 218 (2010)

This Australian endemic was previously known from Western Australia, South Australia and Victoria (McCarthy 2011).

#### SPECIMEN EXAMINED

*Tasmania*: • Esk Highway, c. 7.7 km E of railway bridge near Llewellyn Siding, 41°49'S, 147°34'E, 230 m, on *Bursaria spinosa* in open *Eucalyptus* woodland with *Bursaria* and scattered dolerite rocks, *J.A. Elix* 28790 & *G. Kantvilas*, 9.xi.2004 (CANB).

### 3. *Buellia rechingeri* Zahlbr., *Denkschr. Kaiserl. Akad. Wiss. Wien, Math.-Naturwiss. Kl.* 81, 274 (1907)

Synonym: *Hafellia rechingeri* (Zahlbr.) Marbach, *Biblioth. Lichenol.* 74, 283 (2000).

This species is known from Samoa, and in Australia from Western Australia, Northern Territory and Queensland (Elix 2009a; McCarthy 2011).

#### SPECIMEN EXAMINED

*New South Wales*: • Wedding Bells State Forest, Gentle Annie Road, 5 km W of Woolgoolga, 30°07'00"S, 153°08'29"E, 200 m, on old wood in open *Eucalyptus* woodland, *J.A. Elix* 44976, 10.viii.2008 (CANB).

### 4. *Buellia xanthonica* (Elix) Elix, *Fl. Australia* 57, 660 (2009)

Synonym: *Hafellia xanthonica* Elix, *Australas. Lichenol.* 59, 36 (2006).

This endemic species was previously known from New South Wales, Victoria, Tasmania and Western Australia (Elix 2009a; McCarthy 2011).

#### SPECIMEN EXAMINED

*Queensland*: • Millmerran-Cecil Plains road, 13 km S of Cecil Plains, 27°37'33"S, 151°09'56"E, 375 m, on *Callitris* in mixed *Eucalyptus*, *Callitris*, *Casuarina*, *Myoporum* woodland, *J.A. Elix* 38503, 8.v.2005 (CANB).

### 5. *Caloplaca rheinigera* Elix & S.Kondr., *Biblioth. Lichenol.* 95, 375 (2007)

This endemic species was previously known from Queensland (Kondratyuk *et al.* 2007; McCarthy 2011).

#### SPECIMEN EXAMINED

*New South Wales*: • Glacial Area, Bingara-Narrabri road, 37 km SW of Bingara, 30°02'05"S, 150°19'02"E, 375 m, on *Melaleuca* in mixed *Eucalyptus*-*Callitris* woodland, *J.A. Elix* 44330, 9.v.2005 (CANB).

### 6. *Diploschistes elixii* Lumbsch & Mangold, *Lichenologist* 39, 459 (2007)

This endemic species was known previously from Western Australia (Mangold *et al.* 2009; McCarthy 2011).

#### SPECIMEN EXAMINED

*South Australia*: • 2 km W of Peake, opposite Lindner Road, 35°21'30"S, 139°55'54"E, 20 m, on soil in remnant mallee *Eucalyptus* woodland, *J.A. Elix* 43477, 17.iv.2009 (CANB).

7. *Diplotomma alboatrum* (Hoffm.) Flot., *Jahrb. Schles. Ges. Vaterl. Kult.* 149, 130 (1849)  
In Australia this cosmopolitan species was previously known from Western Australia, South Australia, Victoria and Tasmania (McCarthy 2011).

#### SPECIMEN EXAMINED

*New South Wales*: • Balranald District, 4 km S of Sturt Highway along the Toolebuc Road, 34°42'26"S, 143°32'58"E, 65 m, on limestone rocks in remnant mallee scrub, *J.A. Elix* 43120, 6.iv.2009 (CANB).

### 8. *Gassicurtia subpulcella* (Vain.) Marbach, *Biblioth. Lichenol.* 74, 244 (2000)

This species was known previously from Asia, Africa, North and South America (Marbach 2000) and Lord Howe Island (Elix 2007a).

#### SPECIMEN EXAMINED

*Queensland*: • Atherton Tableland, Davies Creek Falls, 20 km E of Mareeba, 17°00'16"S, 145°34'51"E, 560 m, on *Allocasuarina* in dry sclerophyll woodland, *J.A. Elix* 43533, 2.viii.2006 (CANB).

### 9. *Heterodermia fragilissima* (Kurok.) J.-C. Wei & J.-M. Jiang, *Lich. Xizang* 111 (1986)

This species is known from Japan and China (Kurokawa 1962), and although it has been reported for Australia, no locality data were given (McCarthy 2011).

#### SPECIMENS EXAMINED

*Western Australia*: • Darling district, West Cape Howe, 35°08'S, 117°36'E, 600 m, on granite rocks, *M.F. Day* 85/80, 19.ix.1985 (CANB).

*Queensland*: • Kennedy North district, Lannercost State Forest, North Wallaman logging area, 36 km NW of Ingham, 18°36'S, 145°50'E, 600 m, on tree in disturbed rainforest, *J.A. Elix* 15824 & *H. Streimann*, 21.vi.1984 (CANB); • Cook district, Lamb Range, 21 km NE of Atherton, 17°07'S, 145°35'E, 1180 m, on sapling in regrowth rainforest, *J.A. Elix* 16590 & *H. Streimann*, 27.vi.1984 (CANB); • Kennedy North district, Kirrima State Forest, Cardwell Range, Dunn Creek, 23 km WNW of Cardwell, 18°12'S, 145°49'E, 730 m, on sapling along the rainforest margin, *J.A. Elix* 17629 & *H. Streimann*, 8.vii.1984 (CANB).

*New South Wales*: • Southern Tablelands, Clyde Mountain, above the road, 35°33'S, 149°57'E, 730 m, on sapling in rainforest *J.A. Elix* 1015 (CANB); • Pinkwood Creek, Hanging Mountain Forest Reserve, 25 km SW of Moruya, 36°00'S, 149°52'E, 380 m, on fallen branch in *Eucryphia moorei*-dominated creek sides with *Tristaniopsis*, *J.A. Elix* 25451, 20.vi.1990 (CANB).

*Tasmania*: • Bluff Hill, NW Tasmania, 41°01'S, 144°38'E, 40 m, on quartzite rock outcrops in sedgeland heath, *G. Kantvilas* 122/86, 18.iv.1986 (CANB).

### 10. *Heterodermia neglecta* Lendemer, R.C. Harris & E. Tripp, *Bryologist* 110, 490 (2007)

This species was previously known from East Africa and North America, and in Australia from Queensland and New South Wales (Elix 2010a).

#### SPECIMENS EXAMINED

*Western Australia*: • Porongurup National Park, Porongurup Range, track to Hayward Peak, 22 km ESE of Mt Barker, 34°41'S, 117°51'E, 320 m, on shaded granite rocks in sclerophyll forest, *J.A. Elix* 41437, 16.ix.1994 (CANB).

*Victoria*: • Double Creek Nature Walk, 15 km S of Genoa along the Malacoota road, 37°31'50"S, 149°41'20"E, 5 m, on *Bedfordia* in mixed *Eucalyptus*-*Acacia* forest, *J.A. Elix* 43749, 11.xi.2008 (CANB).

### 11. *Heterodermia reagens* (Kurok.) Elix, *Australas. Lichenol.* 67, 6 (2010)

This species was previously known from Asia, Central and South America, Africa and New Zealand, and in Australia from Queensland and Victoria (Elix 2010b, McCarthy 2011).

## SPECIMEN EXAMINED

*Western Australia*: • Menzies district, Porongurup Range, near summit of Nancy Peak, 34°41'S, 117°52'E, on blackboy trunk, *N. Sammy* 951354, 8.xii.1995 (CANB, PERTH).

12. *Heterodermia stellata* (Vain.) W.A.Weber, *Mycotaxon* 13, 102 (1981)

This species was previously known from Central and South America (Kurokawa 1962) and in Australia from New South Wales (Elix 2011).

## SPECIMENS EXAMINED

*Queensland*: • Kennedy North district, Kirrima State Forest, Cardwell Range, Dunn Creek, 23 km WNW of Cardwell, 18°12'S, 145°48'E, 750 m, on canopy twigs in rainforest along logging trail, *J.A. Elix* 15718 & *H. Streimann*, 20.vi.1984 (CANB); • Kennedy North district, Kirrima State Forest, Yuccabine Creek, Kirrima Road, 27 km WNW of Cardwell, 18°12'S, 145°45'E, 550 m, on dead branch in rainforest beside stream, *J.A. Elix* 15747 & *H. Streimann*, 20.vi.1984 (CANB); • Big Tableland, 26 km S of Cooktown, 15°43'S, 145°17'E, 610 m, on sapling along margin of stunted rainforest, *J.A. Elix* 17302 & *H. Streimann*, 4.vii.1984 (CANB), on *Acacia* stem, *H. Streimann* 30751, 4.vii.1984 (CANB), on stem of shaded treelet, *H. Streimann* 30774, 4.vii.1984 (CANB).

13. *Lecanora flavidomarginata* de Lesd., *Lich. Mexique* 14 (1914)

This species is widespread in Asia, North, Central and South America and New Zealand. In Australia it was previously known from Western Australia, South Australia, New South Wales, the Australian Capital Territory, Victoria and Tasmania (McCarthy 2011).

## SPECIMENS EXAMINED

*Queensland*: • Millmerran-Cecil Plains road, 13 km S of Cecil Plains, 27°37'33"S, 151°09'56"E, 375 m, on dead twigs of *Callitris* in mixed *Eucalyptus*, *Callitris*, *Casuarina*, *Myoporum* woodland, *J.A. Elix* 38517, 8.v.2005 (CANB); • Bringalily State Forest, 41 km S of Millmerran on the Millmerran-Inglewood road, 28°12'02"S, 151°10'35"E, 330 m, on dead twigs of *Callitris* in mixed *Eucalyptus*, *Callitris*, *Casuarina*, *Myoporum* woodland, *J.A. Elix* 43634, 8.v.2005 (CANB).

14. *Megalaria bryophila* (Müll.Arg.) Elix, comb. nov.

Basionym: *Patellaria bryophila* Müll.Arg., *Bull. Herb. Boissier* 1, 48 (1893).

Synonym: *Catillaria bryophila* (Müll.Arg.) Zahlbr., *Cat. Lich. Univ.* 4, 32 (1926).

This species resembles *Megalaria grossa* (Pers. ex Nyl.) Hafellner in apothecial anatomy, but it has a persistent leprose-granular upper surface and narrower ascospores. It was previously known from Victoria (McCarthy 2011).

## SPECIMEN EXAMINED

*New South Wales*: • Cottan-Bimbang National Park, junction of Oxley Highway and Tobins Road, c. 70 km E of Walcha, 31°22'22"S, 152°03'37"E, 1040 m, on treelet in wet *Eucalyptus* forest with tree fern understorey, *J.A. Elix* 39902, 6.viii.2008 (CANB).

15. *Megalaria melanotropica* (Nyl.) D.J.Galloway, *N.Z. J. Bot.* 42, 115 (2004)

This Australasian species was previously known from Victoria, Tasmania and New Zealand (Galloway 2007, McCarthy 2011).

## SPECIMENS EXAMINED

*New South Wales*: • Limeburners Creek Wilderness Area, Fire Management Trail, 12 km S of Crescent Head 31°17'02"S, 152°57'43"E, 15 m, on *Banksia* in coastal woodland with *Casuarina* and *Eucalyptus*, *J.A. Elix* 43781, 43788, 7.viii.2008 (CANB).

16. *Menegazzia caesiopruinosa* P. James, in Kantvilas & James, *Lichenologist* 19, 25 (1987)

This Australian endemic was previously known from Western Australia, South Australia, Victoria and Tasmania (McCarthy 2011).

## SPECIMEN EXAMINED

*New South Wales*: • Wallangaraugh River Rest Area, Princess Highway, 45 km S of Eden, 37°22'10"S, 149°42'54"E, 20 m, on *Leptospermum* in *Eucalyptus-Acacia* forest, *J.A. Elix* 43911, 12.xi.2008 (CANB).

17. *Menegazzia norstictica* P.James, in James & Galloway, *Fl. Australia* 54, 313 (1992)

This endemic Australian species was previously known from Victoria and Tasmania (McCarthy 2011).

## SPECIMEN EXAMINED

*New South Wales*: • 55 km W of Dorrigo along the Armidale road, 30°32'S, 150°01'E, 950 m, on *Banksia* in wet sclerophyll forest, *J.A. Elix* 2390, 17.viii.1976 (CANB).

18. *Micarea denigrata* (Fr.) Hedl., *Bih. Kongl. Svenska Vetensk.-Akad. Handl.* 18(3), 78, 89 (1892)

This species was previously known from Europe, North America and Asia, and in Australia from the Australian Capital Territory (McCarthy 2011).

## SPECIMEN EXAMINED

*New South Wales*: • Golden Highway, 12 km SW of Dunedoo, 32°03'18"S, 149°17'02"E, 350 m, on dead wood in remnant *Eucalyptus-Callitris* woodland, *J.A. Elix* 39555, 5.viii.2008 (CANB).

19. *Ochrolechia africana* Vain., *Ann. Univ. Fenn. Aboensis*, Ser. A, 2(3): 3 (1926)

This species was previously known from North and South America and southern Africa, and in Australia from Western Australia, Queensland, the Australian Capital Territory and Lord Howe Island (McCarthy 2011).

## SPECIMENS EXAMINED

*South Australia*: • Mount Lofty Ranges, 6.5 km W of Springton along the High Eden road, 34°42'S, 139°02'E, 480 m, on *Casuarina* in open *Eucalyptus* woodland, *J.A. Elix* 457, 14.x.1970 (CANB); on dead wood, *J.A. Elix* 10923, 16.v.1983 (CANB).

*New South Wales*: • South-east Forests National Park, White Rock River, White Rock Picnic Area, 28 km SSE of Bombala, 37°08'06"S, 149°21'20"E, 490 m, on dead log in open *Eucalyptus* woodland with granite outcrops, *J.A. Elix* 44020, 12.xi.2008 (CANB); • Stonehenge State Forest, 3 km E of Warialda, 29°33'09"S, 150°35'53"E, 355 m, on *Callitris* in *Eucalyptus-Callitris* woodland, *J.A. Elix* 44174, 44180, 44183, 9.v.2005 (CANB); • Temagog Road, 8 km S of Kempsey-Armidale road, 20 km NW of Kempsey, 30°59'39"S, 152°35'42"E, 70 m, on branch of ironbark in open *Eucalyptus* woodland, *J.A. Elix* 44372, 8.viii.2008 (CANB).

*Victoria*: • Chiltern-Mount Pilot National Park, 2 km N of Chiltern, 36°07'47"S, 146°36'42"E, 200 m, on dead shrub in open *Eucalyptus* woodland, *J.A. Elix* 36938, 5.v.2006 (CANB); • Drummer Rainforest Walk, 10 km E of Cann River township, 37°34'05"S, 149°16'26"E, 80 m, on base of *Eucalyptus* at margin of warm-temperate rainforest and *Eucalyptus* woodland, *J.A. Elix* 43541, 11.xi.2008 (CANB).

20. *Ochrolechia neoisidiata* Elix, *Australas. Lichenol.* 61, 22 (2007)

This Australian endemic was previously known from the Northern Territory (Elix 2007b).

## SPECIMEN EXAMINED

*Queensland*: • Rocky Point, 13 km NE of Mossman, 16°23'06"S, 145°21'01"E, 3 m, on *Acacia* in rocky coastal area, *J.A. Elix* 43419, 1.viii.2006 (CANB).

21. *Pertusaria neutriconica* Elix & A.W.Archer, *Australas. Lichenol.* 60, 22 (2007)

This endemic Australian species was known previously from New South Wales (Elix & Archer 2007).

SPECIMEN EXAMINED

Victoria: • Drummer Rainforest Walk, 10 km E of Cann River township, 37°34'05"S, 149°16'26"E, 80 m, on base of tree in warm-temperate rainforest, *J.A. Elix* 43565, 11.xi.2008 (CANB).

22. ***Pertusaria wallamanensis*** Elix & A.W.Archer, in Archer & Elix, *Nova Hedwigia* **89**, 5 (2009)

This endemic Australian species was known previously from Queensland (Archer & Elix 2009).

SPECIMEN EXAMINED

New South Wales: • Limeburners Creek Nature Reserve, Queens Head area, 15 km S of Crescent Head, 31°19'09"S, 152°58'05"E, 5 m, on base of rainforest tree in coastal scrub with *Casuarina* and palms, *J.A. Elix* 43598, 7.viii.2008 (CANB).

23. ***Physcia albata*** (F.Wilson) Hale, *Bryologist* **66**, 73 (1963)

This species is known from South America, East and South Africa, Hawaii and New Zealand, and in Australia from Western Australia, Victoria and Tasmania (Moberg 2001).

SPECIMEN EXAMINED

South Australia: • Kangaroo Island, Dudley Peninsula, W end of Antechamber Bay, 35°48'S, 138°05'E, 1 m, on schist rocks along the foreshore, *J.A. Elix* 19689 & *L.H. Elix*, 28.x.1985 (CANB).

24. ***Physcia biziana*** (A.Massal.) Zahlbr., *Österr. Bot. Zeit.* **51**, 348 (1901)

This species is known from Europe, North and South America and Africa, and in Australia from Western Australia and Northern Territory (Moberg 2001).

SPECIMENS EXAMINED

South Australia: • Near Saltia Hill, south Flinders Ranges, 17 km ENE of Port Augusta, 32°28'S, 137°56'E, 300 m, on *Casuarina stricta* on steep rocky slope with scattered *Casuarina* and *Eucalyptus*, *J.A. Elix* 41857, 23.ix.1994 (CANB).

Queensland: • Burke district, Mt Walker, 15 km S of Hughenden, 20°55'S, 144°14'E, 400 m, on conglomerate rocks in *Eucalyptus* woodland, *J.A. Elix* 20701 & *H. Streimann*, 25.vi.1986 (CANB).

New South Wales: • Silver City Highway, 26 km by road N of Wentworth, 33°53'28"S, 141°47'08"E, 35 m, on *Casuarina* in *Casuarina* woodland with saltbush, *J.A. Elix* 30759, 14.v.2003 (CANB); • North Far Western Plains, 126 km E of Broken Hill, near Dolo Hill on Barrier Highway from Wilcannia, 31°41'S, 142°46'E, 150 m, on *Casuarina cristata* in *Acacia-Casuarina* woodland, *C.H. Miller* 333, 26.ix.1985 (CANB).

25. ***Physcia dubia*** (Hoffm.) Lettau, *Hedwigia* **52**, 254 (1912)

This species was previously known from Europe, North America, Asia and New Zealand, and in Australia from Tasmania and New South Wales (Elix & Kantvilas 1995).

SPECIMEN EXAMINED

Victoria: • Mt McKay, Alpine National Park, 16 km SSE of Mt Beauty, 36°52'S, 147°14'E, 1840 m, on rocks in exposed subalpine grasslands with gneiss outcrops, *J.A. Elix* 40596 & *H. Streimann*, 18.ii.1994 (B, CANB).

26. ***Physcia verrucosa*** Moberg, *Nordic J. Bot.* **6**, 862 (1986)

This species was known previously from East Africa and south-western Western Australia (Moberg 2001).

SPECIMENS EXAMINED

South Australia: • Eyre Peninsula, Mangalo, 22 km NE of Cleve, 33°32'S, 136°37'E, 270

m, on *Callitris* in remnant *Eucalyptus-Callitris* woodland, *J.A. Elix* 41831, 41840, 23.ix.1994 (B, CANB).

27. ***Rinodina xanthomelana*** Müll.Arg., *Nuovo Giorn. Bot. Ital.* **23**, 390 (1891)

This species is known from Indonesia and Taiwan, and in Australia from Queensland and Western Australia (McCarthy 2011).

SPECIMEN EXAMINED

Lord Howe Island: • track to Little Island, near Salmon Beach, 31°33'30"S, 159°04'30"E, 5 m, on basalt rocks in scrubby, partly disturbed lowland forest, *J.A. Elix* 32697, 20.vi.1992 (CANB).

28. ***Teloschistes sieberianus*** (Laurer) Hillmann, *Hedwigia* **69**, 315 (1930)

In Australia this cosmopolitan species was known previously from Western Australia, South Australia, New South Wales, the Australian Capital Territory, Victoria and Tasmania (McCarthy 2011).

SPECIMENS EXAMINED

Queensland: • Bringalily State Forest, 41 km S of Millmerran on the Millmerran-Inglewood road, 28°12'02"S, 151°10'35"E, 330 m, on twigs of *Callitris* and *Myoporum* in mixed *Eucalyptus*, *Callitris*, *Casuarina*, *Myoporum* woodland, *J.A. Elix* 43638, 43642, 8.v.2005 (CANB).

29. ***Tephromela connivens*** (Müll.Arg.) Kalb, *Biblioth. Lichenol.* **95**, 314 (2007)

This very rare endemic species was previously known only from the type collection from an unknown locality in Queensland (Elix 2009b).

SPECIMEN EXAMINED

Queensland: • Bringalily State Forest, 41 km S of Millmerran on the Millmerran-Inglewood road, 28°12'02"S, 151°10'35"E, 330 m, on *Hakea* in mixed *Eucalyptus*, *Callitris*, *Casuarina*, *Myoporum* woodland, *J.A. Elix* 43662, 8.v.2005 (CANB).

30. ***Usnea baileyi*** (Stirt.) Zahlbr., *Denkschr. Kaiserl. Akad. Wiss. Wien, Math.-Naturwiss. Kl.* **83**, 182 (1909)

In Australia this pantropical-pantemperate species was previously known from Queensland, New South Wales, Tasmania and Lord Howe Island (McCarthy 2011).

SPECIMEN EXAMINED

Victoria: • Eastern foothills of Pine Mountain, 12 km SE of Walwa, 37°04'S, 145°06'E, on shrubs in *Eucalyptus* woodland, *J.A. Elix* 2726, 13.ix.1975 (CANB).

31. ***Usnea oncodeoides*** G.N.Stevens, *Biblioth. Lichenol.* **72**, 71 (1999)

This Australian endemic was previously known from Tasmania and Victoria (McCarthy 2011).

SPECIMENS EXAMINED

Western Australia: • Donnelly Well, along Donnelly River, 21 km N of Manjimup, 34°04'16"S, 116°10'37"E, 285 m, on *Melaleuca* in swampy area with *Melaleuca* and *Banksia*, *J.A. Elix* 39468, 39478, 39479, 7.iv.2006 (CANB).

**Acknowledgements**

I thank Dr Gintaras Kantvilas (HO), Dr Christine Cargill and Ms Judith Curnow (CANB) for their kind assistance, and Dr Martin Kukwa (Gdansk) for an authentic sample of *Botryolepraria neotropica*.

## References

- Aptroot, A; Thor, G; Lücking, R; Elix, JA; Chaves, JL (2009): The lichen genus *Herpothallon* reinstated. *Bibliotheca Lichenologica* **99**, 19–66.
- Archer, AW; Elix, JA (2009): New species and new reports in the lichen genus *Pertusaria* (Ascomycota: Pertusariaceae) in Australasia. *Nova Hedwigia* **88**, 1–10.
- Bungartz, F; Nordin, A; Grube, U (2007): *Buellia* De Not. In Nash III, TH; Gries, C; Bungartz, F (eds) *Lichen Flora of the Greater Sonoran Desert Region* **3**, 113–179. University of Arizona, Tempe.
- Coppins, BJ (1999): Two new species of *Micarea* from South Africa. *Lichenologist* **31**, 559–565.
- Elix, JA; Kantvilas, G (1995): New taxa and new records from the Tasmanian lichen flora. *Papers and Proceedings of the Royal Society of Tasmania* **129**, 63–68.
- Elix, JA (2007a): Additional lichen records from Australia 64. *Australasian Lichenology* **61**, 8–15.
- Elix, JA (2007b): Further new crustose lichens (Ascomycota) from Australia. *Australasian Lichenology* **61**, 21–25.
- Elix, JA; Archer, AW (2007): Four new species of *Pertusaria* (lichenized Ascomycota) from Australasia. *Australasian Lichenology* **60**, 20–25.
- Elix, JA (2009a): *Buellia*. *Flora of Australia (Lichens 5)* **57**, 495–507.
- Elix, JA (2009b): *Tephromela*. *Flora of Australia (Lichens 5)* **57**, 74–83.
- Elix, JA (2010a): Additional lichen records from Australia (72). *Australasian Lichenology* **66**, 60–69.
- Elix, JA (2010b): Two new species, a new combination and new chemical data for *Heterodermia* (Physciaceae: Ascomycota). *Australasian Lichenology* **67**, 3–9.
- Elix, JA (2011): Further new species and new records of *Heterodermia* (Physciaceae: Ascomycota) from Australia. *Australasian Lichenology* **69**, 12–24.
- Galloway, DJ (1985): *Flora of New Zealand Lichens*. P.D. Hasselberg, New Zealand Government Printer, Wellington.
- Galloway, DJ (2007): *Flora of New Zealand Lichens*. Revised 2nd edn, Manaaki Whenua Press, Lincoln.
- Gilbert, OL; Hawksworth, DL (2009): *Clauzadea* Hafellner & Bellem. (1984) In Smith, CW; Aptroot, A; Coppins, BJ; Fletcher, A; Gilbert, OL; James, PW; Wolseley, PA (eds), *The Lichen Flora of Great Britain and Ireland* 2nd edn, pp. 339–341, The British Lichen Society, London.
- Kondratyuk, SY; Kärnefelt, I; Elix, JA; Thell, A (2007): New species of the genus *Caloplaca* in Australia. *Bibliotheca Lichenologica* **95**, 341–386.
- Kukwa, M; Pérez-Ortega, S (2009): A second species of *Botryolepraria* from the Neotropics and the phylogenetic placement of the genus within Ascomycota. *Mycological Progress* **9**, 345–351.
- Kukwa, M (2011): *Botryolepraria neotropica* found in the Paleotropics. *Graphis Scripta* **23**, 8–9.
- Kurokawa, S (1962): A monograph of the genus *Anaptychia*. *Beihefte zur Nova Hedwigia* **6**, 1–115.
- Mangold, A; Elix, JA; Lumbsch, HT (2009): *Diploschistes*. *Flora of Australia (Lichens 5)* **57**, 227–239.
- Marbach, B (2000): Corticole und lignicole Arten der Flechtengattung *Buellia* sensu lato in den Subtropen und Tropen. *Bibliotheca Lichenologica* **74**, 1–384.
- Matzer, M; Mayrhofer, H; Rambold, G (1997): *Diploicia africana* comb. nov. (lichenized Ascomycetes, Physciaceae), an endemic species from Cape Province (South Africa). *Nordic Journal of Botany* **17**, 433–438.
- McCarthy, PM (2011): *Checklist of the Lichens of Australia and its Island Territories*. ABRIS: Canberra. <http://www.anbg.gov.au/abris/lichenlist/introduction.html> (version 23 March, 2011).
- Moberg, R (2001): The lichen genus *Physcia* in Australia. *Bibliotheca Lichenologica* **78**, 289–311.
- Orange, A; Laundon, JR (2009): *Botryolepraria* Canals et al. (1997) In Smith, CW; Aptroot, A; Coppins, BJ; Fletcher, A; Gilbert, OL; James, PW; Wolseley, PA (eds), *The Lichen Flora of Great Britain and Ireland* 2nd edn, p. 220, The British Lichen Society, London.
- Tindal, E (2008): Studies on *Phyllopsora* (Ramalinaceae) in Peru. *Lichenologist* **40**, 337–362.

## Additional lichen records from New Zealand 48

David J. Galloway

Landcare Research, Private Bag 1930, Dunedin, New Zealand  
e-mail: gallowayd@xtra.co.nz

Janet Ledingham

Department of Pharmacology, University of Otago School of Medical Sciences,  
PO Box 913, Dunedin, New Zealand

**Abstract:** *Adelolecia* cf. *kolaensis* (Nyl.) Hertel & Rambold, *Lecanora pruinosa* Chaub., *Leptogium schraderi* (Bernh.) Nyl., *Lobothallia alphoplaca* (Wahlenb.) Hafellner, *L. melanaspis* (Ach.) Hafellner, \**Paranectria alstrupii* Zhurb., *Peltigera elisabethae* Gyeln., \**Phacopsis fusca* (Triebe & Rambold) Diederich, *Psora pacifica* Timdal, *Toninia squalecens* (Nyl.) Th.Fr. and *Trapelia placodioides* Coppins & P.James, are reported as new to New Zealand. Except for *Adelolecia* cf. *kolaensis*, \**Paranectria alstrupii* and \**Phacopsis fusca*, all are new to the Southern Hemisphere as well (*note*: an asterisk denotes a lichenicolous fungus).

## NEW RECORDS FOR NEW ZEALAND

### 1. *Adelolecia* cf. *kolaensis* (Nyl.) Hertel & Rambold, *Biblioth. Lichenol.* 57, 214 (1995)

*Thallus* of minute creamish to pale yellowish brown areolae, 0.1–1 mm diam., coalescing into larger structures following joints and cracks in rock substratum and forming elongated patches 1–3 cm diam. Upper surface convex, minutely cracked, surrounded and/or intersected by a thin, narrow, black prothallus, the whole lichen appearing piebald. *Apothecia* sessile, scattered, black, lecideine, convex; disc matt, epruinose, slightly roughened. *Epithecium* blue-green to blue, 5.5–13  $\mu$ m thick. *Hymenium* hyaline with bluish streaks, 30–60  $\mu$ m tall; paraphyses confluent, 2–3  $\mu$ m wide, apices swollen (blue-green- to blue-capitate) to 4.5  $\mu$ m. *Asci* cylindrical-clavate, *Biatora*-type, 30–40  $\times$  11–13.5  $\mu$ m. *Ascospores* not seen. Squash preparations were made from several of the apothecia developed in the sole specimen examined, but although many typical asci were observed, none had developed ascospores. That same difficulty in polar collections of *Lecidea* was recently noted by Hertel (2009) and Ruprecht *et al.* (2010), where identification of crustose lecideoid lichens is often hampered by the common occurrence of chasmolithic growth and ascomata lacking ascospores or with only sparsely developed ascospores.

*Adelolecia kolaensis*, a bipolar species, is placed in the Ramalinaceae (Lumbsch & Huhndorf 2010). In the Northern Hemisphere it is a circumpolar, holarctic lichen with a preference for cool oceanic climates, and is found in Europe, Scandinavia, Greenland, Iceland, Jan Mayen, Svalbard, Russia, the Ukraine and North America (Hertel & Rambold 1995; Vondrák *et al.* 2010; Esslinger 2011). In the Southern Hemisphere, it has been recorded from southern Chile (Hertel 2001).

### SPECIMEN EXAMINED

*Canterbury*: • Mt Cook National Park, De la Beche Ridge, on blocky nival zone red rock, 2396 m, *H.D. Wilson* 2551 (CHR 260652), 8.ii.1972. Hannes Hertel (2001, 2009) has annotated the specimen "Unfortunately no ripe ascospores developed. Very untypical is the prominent prothallus and the pale yellow thallus. In macroscopic characters resembling *Lecidea lapicida* var. *maungahukae*, but differing in many internal characters".

### 2. *Lecanora pruinosa* Chaub. in J.F.B. de Saint-Amans, *Fl. Agen.*, 495 (1821)

*Thallus* placodioid, forming rounded, discrete to interlocking patches (1–)2–5(–10–15) cm diam., areolate centrally, the thalli often coalescing to form extensive patches; areolae convex, angular, 0.5–1.5 mm diam. Marginal lobes 0.5–1 mm wide, radiating, flattened to subconvex, closely contiguous, separated by deep cracks, white to pale

yellowish white, apices greyish or slightly blackened. Upper surface densely granular, white-pruinose ( $\times 10$  lens), prothallus absent. *Apothecia* 0.3–1(–1.5) mm diam., sessile, rounded, irregular to  $\pm$ angular, developed centrally on areolae. Thalline margin persistent, well-developed, slightly raised, c. 0.1 mm wide, entire to crenate-striate, white-pruinose, concolorous with the thallus. Disc subconcave at first, becoming plane, pinkish brown to dark red-brown, densely white-grey-pruinose. *Epithecium* yellow-brown, interspersed with coarse, angular crystals not dissolving in K, 10–15  $\mu$ m thick. *Hymenium* hyaline, 65–75(–80)  $\mu$ m tall; paraphyses 1.5–2.5  $\mu$ m thick, swollen apically (yellow-brown-capitate) to 3.5  $\mu$ m. *Asci* elongate-clavate, 45–65  $\times$  10–15  $\mu$ m. *Ascospores* colourless, (8–)10–13(–15)  $\times$  5–7.5  $\mu$ m.

*Chemistry*: thallus K+ yellow, C+ orange, Pd–, UV+ orange; containing arthothelin and 2,7-dichloronorlichexanthone (Edwards *et al.* 2009: 494).

This limestone-inhabiting species, first collected by Colin Meurk, was identified at the time by Hannes Hertel as *Lecanora* sect. *Placodium*. Detailed study of it and other collections shows it to be similar in all anatomical and morphological details to Northern Hemisphere specimens. The Rangitata Valley specimen was associated with *Caloplaca holocarpa*, *Lecanora crenulata*, *L. semipallida*, *Physcia adscendens*, *Rinodina reagens* and *Zahlbrucknerella calcarea*. Material from Elephant Rocks near Ngapara was associated with the same community of lichens plus *Placynthium nigrum*.

*Lecanora pruinosa* occurs widely in the Northern Hemisphere, being recorded from Great Britain, Scandinavia, Europe, North Africa, Turkey, Israel, Syria, Tajikistan, Russia and North America (Nimis & Poelt 1987; Nimis 1993; Renobales 1996; Seaward 1996; Galun & Mukhtar 1996; Ariño *et al.* 1997; Kudratov & Mayrhofer 2002; Temina *et al.* 2004; John *et al.* 2004; Edwards *et al.* 2009; Kidron & Temina 2010; Zhdanov 2010; Esslinger 2011). It is new to the Southern Hemisphere.

### SPECIMENS EXAMINED

*Canterbury*: • Whiterock, Rangitata Valley, 518 m, on limestone, *C.D. Meurk s.n.* (CHR 543850), 17.i.1985. *Otago*: • Duntroon-Ngapara road, on exposed, flat limestone pavement near Elephant Rocks Reserve, 205 m, *D.J. Galloway* 8134 (CHR 528356), 11.vi.2011.

### 3. *Leptogium schraderi* (Bernh.) Nyl., *Acta Soc. Linn. Bordeaux* 21, 272 (1856)

*Thallus* in small, rounded tufts, 0.5–1.5(–2) cm diam., consisting of small 3–5  $\times$  0.2–0.6 mm, closely packed, ascending or erect, fruticose thalli. Individual thalli dichotomously to irregularly branched, appearing almost cauliflower-like, with cylindrical to commonly compressed branches; attached to the substratum by a small tuft of rhizoidal hyphae. Surface glossy, dark green when moist, dark olive-brown or red-brown when dry, basal parts pale yellowish or olivaceous, plump when moist, strongly wrinkled-plicate when dry. *Apothecia* rare, developed near tips of branches, becoming lateral as branches develop, to 1.5 mm diam., disc concave, thalline margin swollen to somewhat granular, concolorous with the thallus. *Ascospores* hyaline, 3-septate to muriform, 20–32  $\times$  10–12  $\mu$ m. *Pycnidia* occasional, visible as yellowish brown spots on sides of otherwise dark green branches, opening by a minute ostiole. *Conidia* bacillar, 4–5  $\times$  1.5  $\mu$ m.

*Leptogium schraderi* is a calcicolous bipolar species known from Great Britain, Europe, Scandinavia (where it is rare and threatened), Morocco, Greece, Turkey, Syria, Russia and North America (Christiansen *et al.* 1979; Nimis & Poelt 1987; Nimis 1993; Jørgensen 1994a, 2007; Egea 1996; John 1996; Thor & Arvidsson 1999; Sérusiaux *et al.* 2004; Muchnik & Urbanavichus 2001; Llimona & Hladun 2001; John *et al.* 2004; Aragón *et al.* 2005; Spribille *et al.* 2006; Vondrák & Etayo 2007; Gilbert & Jørgensen 2009; Björk 2010; Pykälä 2010; Yazici *et al.* 2010; Esslinger 2011). It is newly reported from the Southern Hemisphere.

### SPECIMEN EXAMINED

*Canterbury*: • Cave Stream, Castle Hill Basin, on moss on limestone, *C.D. Meurk s.n.* (CHR 543974), x.1988.



4. **Lobothallia alphoplaca** (Wahlenb.) Hafellner, *Acta Bot. Malacitana* 16, 138 (1991)

*Thallus* loosely to closely attached, sometimes easily detachable intact, rosette-forming to irregularly spreading and coalescing, (0.5–)1–4(–6) cm diam., placodioid, lobate at the margins, areolate centrally, without a marginal prothallus. Marginal lobes convex, swollen, 0.5–1.2 mm × 2–5 mm, radiating, discrete and separated by deep cracks or closely contiguous, apices flabellate, delicately scalloped or incised; central parts noticeably lumpy and areolate-cracked, areolae angular, bullate, separated by narrow cracks or obscured by apothecia. Upper surface matt or here and there subnitid, epruinose, pale to dark olive-brownish or fawnish at the margins, paler to somewhat ashy grey centrally; without isidia, pseudocyphellae or soredia. Medulla white, somewhat hollow in parts. Lower surface corticate, without rhizines or hapters, but noticeably unevenly ridged longitudinally, concolorous with the upper surface, or slightly darker (to brown-black) at margins and surfaces of ridges, elsewhere pale brown. *Apothecia* present in larger thalli, central and often clustered, flush with thallus surface at first, becoming sessile, lecanorine, rounded to somewhat distorted through mutual pressure. (0.1–)0.2–1.5(–2.2) mm diam., margins entire, concolorous with the thallus, noticeably swollen at first, narrowing to a thin rim at maturity; disc plane or shallowly concave, dark brown to brown-black and contrasting with the margins, matt, epruinose. *Epithecium* olive-brown, somewhat granular, dissolving in K, 8–13 µm thick. *Hymenium* colourless, 55–65(–70) µm tall; paraphyses coherent, 2–2.5 µm thick, the upper 3–4 cells submoniliform. *Hypothecium* colourless, opaque, thin. *Asci* clavate, 50–65 × 15–20 µm, 8-spored. *Ascospores* colourless, simple, broadly ellipsoidal, thin-walled, contents vacuolated, apices rounded, 10–13.5(–15) × 5–8.5(–10) µm. *Pycnidia* numerous, densely to sparsely sprinkled over lobes and areolae, though not present at lobe apices, slightly swollen, black or brown-black, to 0.2 mm diam., with a black, glossy, depressed ostiole. *Conidia* colourless, bacillar, 6.5–8 × 1 µm.

*Chemistry*: thallus K–, C–, KC–; medulla K+ yellow to orange-red, C–, KC–; containing norstictic, constictic and stictic acids (Hermann *et al.* 1973; Ryan 2004; Moon & Kashiwadani 2009).

*Lobothallia alphoplaca* is a bipolar species known from North America, Europe, Scandinavia, Morocco, Turkey, Iran, Ukraine and Asia (including Nepal, China, Japan and Korea) (Zahlbruckner 1930; Magnusson 1940; Asahina 1958; Eigler 1969; Hermann *et al.* 1973; Poelt 1974; Buschardt 1979; Nimis & Poelt 1987; Hafellner 1991; Wei 1991; Nimis 1993; Egea 1996; Kondratyuk *et al.* 1996; St Clair 1999; Scholz 2000; Brodo *et al.* 2001; Hafellner & Türk 2001; Kurokawa 2003; Ryan 2004; Seaward *et al.* 2004; Santesson *et al.* 2004; Moon & Kashiwadani 2009; Kocakaya *et al.* 2009; Halici & Aksoy 2009; Baniya *et al.* 2010; Esslinger 2011; Yazici *et al.* 2011). In New Zealand it is so far known only from a single record in Fiordland east of the Homer Tunnel in the Gertrude Valley, where it grows on the flat, sunny tops of boulders in alpine grassland, associating with *Rhizocarpon geographicum* and *Umbilicaria murihikuana*. It is new to the Southern Hemisphere as well.

SPECIMEN EXAMINED

*Southland*: • Gertrude Valley, SH 94, on sunny flat tops of erratic boulders in alpine grassland, 860 m, D.J. Galloway 8116 (CHR 528384), 13.iv.2011.

5. **Lobothallia melanaspis** (Ach.) Hafellner, *Acta Bot. Malacitana* 16, 138 (1991)

*Thallus* foliose, *Physcia*-like, rosette-forming, flat, irregularly spreading, of elongate, radiating, imbricate lobes, (1–)3–5(–6) cm diam., coalescing to 12 cm, closely attached, without a marginal prothallus. Lobes 3–5(–8) × 0.5–0.8(–1) mm, discrete, separated by deep cracks at the margins, convex to flat, apices flabellate; areolate centrally, areolae convex, minute, cerebriform. Upper surface pale greyish to glaucous grey or in parts slightly blackened when dry, olive-green to bright green when moist, darker to somewhat blackened at the lobe apices; with or without a glistening grey-white pruina. *Apothecia* 0.5–1.5 mm diam., round to irregular, concave at first with prominent, swollen margins, clustered centrally, sparse to frequent, sessile, constricted at base

and sometimes appearing substipitate; thalline margin entire, prominent, concolorous with the thallus; disc plane to convex, translucent, red-brown when moist, dark red-brown to brown-black when dry, epruinose. *Epithecium* pale yellow-brown, N+green intensifying, 12.5–18.5 µm. *Hymenium* colourless, (60–)75–100(–115) µm tall; paraphyses weakly branched, to 3 µm wide at the tips. *Hypothecium* opaque, colourless, 80–110 µm thick. *Asci* clavate, 8-spored, 85–105 × 20–25.5 µm. *Ascospores* subglobose to ellipsoidal, 13.5–18.5 × 9–13 µm. *Pycnidia* scattered, immersed, the ostiole minute, black. *Conidia* bacillar, straight, 4.5–6 × 1 µm.

*Chemistry*: thallus K+ red, Pd+ orange; containing traces of norstictic acid and placodin (Hermann *et al.* 1973).

*Lobothallia melanaspis* is a bipolar species known from Great Britain, Scandinavia, Europe, and North America (Eigler 1969; Hermann *et al.* 1973; Poelt 1974; Buschardt 1979; Hafellner 1991; Foucard, 1990; Hafellner & Türk 2001; Nimis 1993; Brodo *et al.* 2001; Santesson *et al.* 2004; Fletcher *et al.* 2009; Esslinger 2011). It is characterized by the saxicolous habit (acid rocks, close to fresh water or partially inundated); the distinctive, rosette-forming, foliose, lobate *Physcia*-like thallus, with convex lobes from the margins towards the centre; and crowded, sessile apothecia with dark red-brown to brown-black discs. It is known from several sites in inland Otago (on rock faces close to the Benmore Dam) and Canterbury, where it grows on sloping rocks close to or sometimes partially inundated by water from lakes or streams in dryish, inland montane areas, in association with *Aspicilia cinerea*, *Caloplaca rubelliana*, *Candelariella vitellina*, *Lecanora semipallida* and *Physcia adscendens*. The site with richest development of *L. melanaspis* is in the Rangitata Valley just above the gorge, where it forms solitary to interlocking rosettes on silicified rhyolite (Dr N. Mortimer pers. comm.) of the Mount Somers Volcanics Group (Cox & Barrell 2007). It is reported here for the first time from the Southern Hemisphere.

SPECIMENS EXAMINED

*Canterbury*: • Stew Point, Rangitata River, 488 m, C.D. Meurk s.n. (CHR 543851), 17.i.1985; • Rangitata Valley, 1.5 km E of Ben McLeod Station, on sloping, periodically inundated rock faces of Cretaceous, silicified rhyolite, 440 m, D.J. Galloway 8129 (CHR 528353), 24.x.2010; • Mackenzie Country, access road W of Ohau B Power Station, on shattered slate face at side of road, 465 m, D.J. Galloway 8131 (CHR 528353), 6.vi.2011.

6. \***Paranectria alstrupii** Zhurb., *Sydowia* 61, 178 (2009)

*Thallus* lichenicolous, on upper and lower surfaces of host. *Perithecia* superficial, attached to a well-developed cottony subiculum, 0.2–0.5 mm thick, solitary or aggregated in small groups (1–4), ovate, broadly ovate to broadly pyriform, constricted at base, 400–750 × 250–600 µm, orange-pink, covered with a dense tomentum, ostiole distinct, papillate, translucent red-brown, 50–70 µm wide. *Hamathecium* of numerous, straight, filiform ostiolar hyphae 1–2 µm diam. *Asci* unitunicate, subcylindrical, the wall not apically thickened and lacking a distinct apical apparatus, 140–220 × 25–50 µm, 4-spored, IKI–. *Ascospores* elliptical to narrowly elliptical or rarely broadly elliptical, apices acute to rounded, furnished with straight, flexible non-septate cauda, 10–40 × 0.5–1 µm, submuriform to muriform (3–6 longisepta and 5–20 transsepta), colourless to pale pinkish brown, (45–)54–75(–92) × (17–)23.5–32.5(–40) µm. Host upper and lower surfaces of *Leptogium laceroides*. Hosts elsewhere include *Psoroma hypnorum* (Greenland), *Stereocaulon* sp. (Papua New Guinea) and *Fuscopannaria laceratula* (Alaska).

\**Paranectria alstrupii* is a bipolar species known from Greenland, Alaska and Papua New Guinea (Zhurbenko 2009; Zhurbenko & Dillman; Esslinger 2011). It is also new to the Southern Hemisphere.

SPECIMEN EXAMINED

*Southland*: • Gertrude Valley, SH 94, 820 m, on mossy boulders in streambed at forest margin, on thalli of *Leptogium laceroides* in moss, D.J. Galloway 8117 (CHR 528385), 13.iv.2011. Dupl. in Herb. Etayo (Pamplona).

7. *Peltigera elisabethae* Gyeln., *Bot. Közlemények* **24**, 135 (1927)

*Thallus* large, spreading, 5–10(–15) cm diam. Lobes 1.5–2 × 5 cm. Upper surface grey-brown, glossy, without pruina or tomentum. Margins of lobes crisped, often furnished with lobules or isidioid schizidia. Lower surface pale fawnish at margins, darkening to brown or brown-black centrally, without veins, but small, pale or whitish interstices are diagnostic. Rhizines black, fasciculate, to 3 mm long. *Apothecia* not seen in New Zealand material.

*Chemistry*: tenuiorin, methyl gyrophorate, gyrophoric acid, zeorin, hopane-7β, 22-diol (tr.) and several unidentified triterpenoids (see Vitikainen 1994: 42; 2007: 118).

*Peltigera elisabethae* is a bipolar species known from Great Britain, Europe, Scandinavia, Turkey, Russia, Asia and North America (Holtan-Hartwig 1993; Nimis 1993; Vitikainen 1994, 2007; Goward *et al.* 2004; John 1996; Scholz 2000; Brodo *et al.* 2001; Nimis & Martellos 2003; Martínez *et al.* 2004; Hitch *et al.* 2009a; Esslinger 2011). It is characterized by a glossy upper surface with marginal lobules, and a lower surface with a continuous covering of tomentum and no true veins as such, but small pale or white interstitial areas near the margins. Specimens collected from Marlborough by the late John Bartlett were identified as *P. elisabethae* (Dr O. Vitikainen, *pers. comm.*), and a re-examination of specimens in CHR earlier identified as *P. malacea* (Galloway 2000) has shown that some are referable to *P. elisabethae*. In New Zealand, *P. elisabethae* occurs in subalpine to high-alpine sites, having an altitudinal range of 875–2146 m. It is also new to the Southern Hemisphere.

SPECIMENS EXAMINED

*Marlborough*: • Branch River, range above Gordon Stream and Saxton Pass, c. 900–1400 m, saxicolous on greywacke, J.K. Bartlett 26725, 26726, 26728 (AK), 1984. *Canterbury*: • Mt Cook National Park, Cooper's Mate, slopes above Aida Glacier, Murchison Valley, nival zone rock face, mostly firm and red but with some rubble, 2146 m, H.D. Wilson 2244 (CHR 260713), 5.ii.1972. *Otago*: • West Hunter Valley, among mosses and debris on damp, subalpine boulders, 1219 m, P. Child 1330 (CHR 445383), 21.i.1971; • Bedford Valley, Mt Earnslaw, 1676 m, D.J. Galloway s.n. (CHR 487973), 26.xii.1970; • Maungatua, on mosses and tussocks overlying earth, W. Martin 5602 (CHR 487977), ii.1956.

8. *\*Phacopsis fusca* (Triebel & Rambold) Diederich, *Herzogia* **16**, 70 (2003)

*Thallus* lichenicolous, forming galls on host thallus. *Apothecia* immersed to semi-immersed, becoming erumpent, 0.15–0.25(–0.35) mm diam., rounded to irregular, crowded or confluent, the disc plane to convex, dark brown to black, matt or glossy, the margins indistinct. *Exciple* 20–30(–45) μm thick, brown to dark brown, of ±isodiametric cells (3–)5–8(–9) μm diam., lumina (1.5–)2–4 μm (*textura angularis*). *Epithecium* pale brown to brown, (10–)15–20(–25) μm thick. *Hymenium* hyaline to pale brownish, (45–)50–60(–65) μm tall, paraphyses septate, scarcely branched or anastomosing, (1.5–)2–2.5(–3.5) μm thick, apical cells with small, dark brown-pigmented caps, 3–3.5 μm diam. *Hypothecium* brown to dark brown, 30–130 μm thick. *Asci* (35–)40–60 × (14–)16–20(–30) μm. *Ascospores* ellipsoidal to citriform, with attenuated ends, (14–)15.5–21(–24.5) × (5–)5.5–6.5(–7) μm, with internal oil droplets, walls smooth, 0.3–0.7 μm thick. *Pycnidia* 70–90 μm diam., globose, immersed, wall dark brown, pseudoparenchymatous, 10–15 μm thick, of 3–4 layers, wall cells 4–5 μm diam. *Conidia* bacillar, 5–6.5 × 0.5–1 μm. Host *Flavoparmelia haysomii*. Elsewhere on *Cavernularia*, *Hypogymnia*, *Hypotrachyna*, *Parmelinopsis*, *Parmotrema* and *Pseudevernia* (Triebel *et al.* 1995; Diederich 2003; Lawrey & Diederich 2011).

*\*Phacopsis fusca* is a widespread taxon known from Great Britain, Europe, Scandinavia, North America, Cape Verde Is, Canary Is, East and South Africa, Venezuela, Peru and Australia (Triebel *et al.* 1995; Diederich 2003; Peršoh & Kainz 2004; Doré *et al.* 2006; Etayo 2010; McCarthy 2011a; Lawrey & Diederich 2011).

SPECIMEN EXAMINED

*Otago*: • Silver Peaks, Green Ridge track, on boulders in clay at the side of the track in manuka scrub, 463 m, on *Flavoparmelia haysomii*, D.J. Galloway 8124 (CHR 528322), 9.i.2008.

9. *Psora pacifica* Timdal, *Bryologist* **89**, 267 (1986)

*Thallus* terricolous, of discrete to crowded squamules forming shallowly convex clumps binding soil, 1–2 cm diam. Squamules rounded to irregular, margins thickened, entire to crenulate or sublobulate, 0.1–1(–1.3) mm diam., weakly concave to weakly convex. Upper surface lettuce-green to olivaceous when moist, especially at margins, paler to whitish and white-pruinose or coarsely white-crystalline (×10 lens) centrally. Lower surface whitish to pale brownish. *Apothecia* laminal, sessile, 1–3(–5) per squamule, rounded or slightly contorted through mutual pressure, 0.1–1(–1.3) mm diam., pale red-brown, translucent when moist, red-brown to dark brown when dry, plane to shallowly convex, epruinose, matt; proper margin very thin, slightly paler than disc, most noticeable in young fruits, mature fruits immarginate. *Epithecium* yellowish pink, decolourizing in K. *Hymenium* 100–120 μm tall, pale yellow-brown, decolourizing in K; paraphyses strongly conglutinate, separating readily in K, 3–5 μm diam., apices not swollen. *Hypothecium* opaque pale yellow-brown, decolourizing in K. *Asci* narrowly cylindrical, 65–75 × 8–10 μm, 8-spored. *Ascospores* simple, colourless, ellipsoidal with pointed apices, (10–)11–13(–14) × 5–6 μm.

*Chemistry*: thallus K–, C+ red (fading), KC+ red (fading), Pd–; containing gyrophoric acid and traces of lecanoric acid (see Timdal 1986, 2002).

*Psora pacifica* is a terricolous, squamulose species previously known from the west coast of North America and thought to be endemic there (Timdal 1986, 2002; Brodo *et al.* 2001; Esslinger 2011). It is also new to the Southern Hemisphere.

SPECIMEN EXAMINED

*Canterbury*: • 3 km S of Twizel, roadside, Wairepo Arm of Lake Ruataniwha, 475 m, on bare soil amongst *Hieraceum*, *Rumex acetosella* and the dryland lichens *Cladia aggregata*, *Xanthoparmelia concomitans*, *X. reptans* and *X. semiviridis*, D.J. Galloway 8121 (CHR 528387), 9.v.2011.

10. *Toninia squalecens* (Nyl.) Th.Fr., *Lichenogr. Scand.* **2**, 340 (1874)

*Thallus* muscicolous, subcrustose, of irregular squamules, 1–3(–5) mm diam., coalescing to form a continuous thallus 1–2 cm diam. Upper surface lettuce-green to olivaceous when moist, greyish olivaceous when dry, slightly uneven or lumpy, granular white-pruinose centrally (×10 lens); margins entire to crenate or sublobulate, slightly thickened. *Apothecia* sessile, laminal, scattered, solitary to 2–3-together, rounded, shallowly convex; disc dark olivaceous to brown-black when moist, black when dry, matt, epruinose, 0.5–1.5 mm diam. *Epithecium* olive-green to olive-brown, 8–13 μm thick, slightly paler and diffusing a yellow pigment in K. *Hymenium* colourless, 50–70 μm tall; paraphyses slender, conglutinate, separating in K, 1–1.5 μm wide, apices slightly swollen, to 3 μm diam., brownish. *Hypothecium* densely opaque, pale yellowish or greyish. *Asci* broadly clavate, 35–40 × 15–17 μm, 8-spored. *Ascospores* colourless, ellipsoidal with slightly pointed apices, 1-septate, 8–10(–11.5) × 4.5–5 μm. *Pycnidia* common, scattered, papillate, 0.05–0.08 mm diam., with a central, depressed brown-black ostiole. *Conidia* colourless, bacillar, 3–5 × 0.8 μm.

*Chemistry*: thallus and medulla K–, C–, KC–, Pd–.

*Toninia squalecens* is a bipolar species known from Great Britain, Europe, Scandinavia, Iceland, Greenland, Novaya Zemlya, Siberia and North America, where it is predominantly a snowbank species with a preference for base-rich substrata (Nylander 1860; Fries 1874; Alstrup 1979; Baumgärtner 1979; Gilbert & Fox 1985; Timdal 1991; Gilbert *et al.* 1992; Gilbert 2000; Fryday 2001a, 2001b; Hafellner & Türk 2001; Santesson *et al.* 2004; Coppins & Fryday 2006; Hitch *et al.* 2009b; Alstrup *et al.* 2009;

Hinds *et al.* 2009; Kristinsson *et al.* 2010; Spribille *et al.* 2010; Esslinger 2011). Although presently accommodated in *Toninia*, the species differs in having strongly conglutinated and more richly branched paraphyses that are not swollen apically, and asci without an ocular chamber and with a more regularly cylindrical amyloid tube structure in the tholus, characters that argue for an alternative generic placement (Timdal 1991: 128). *Toninia squalescens* grows amongst mosses on large greywacke boulders of vegetated terminal moraine walls, but it should be looked for in subalpine to high-alpine bryicolous/terricolous lichen and snowbank communities. In the Tasman Valley collection (below) it associates with the lichens *Bartlettia fragilis*, *Lecanora lugubris*, *Massalonia carnosa* and *Rinodina olivaceobrunnea*. It is also new to the Southern Hemisphere.

#### SPECIMEN EXAMINED

*Canterbury*: • Mt Cook National Park, Tasman Valley, in soil amongst mosses on large boulders in *Aciphylla*/scrub/grassland of vegetated moraine near track to Blue Lakes, 740 m, D.J. Galloway 8122 (CHR 528388), 8.v.2011.

#### 11. *Trapelia placodioides* Coppins & P.James, *Lichenologist* 16, 257 (1984)

*Thallus* crustose, areolate, developing from small, flat to convex squamules, spreading in confluent, round to irregular patches on horizontal surfaces, 1–4–9(–14) cm diam., or in streak-like swards on vertical surfaces, 5–10(–30) cm diam., white or pale pinkish, creamish white or greenish white, areolae discrete or coalescing into flattish to hummocky patches centrally, areolae 0.2–0.5(–0.6) mm diam., separated by deep cracks, distinctly convex, or ±continuous, effigurate, flat or convex at the margins, giving the thallus a somewhat placodioid appearance. *Soralia* numerous, 0.2–0.3 mm diam., usually developing from sides of areolae or from cracks in the thallus and then spreading more widely over large, flat thalli, pale greenish white or pale creamish, the soredia farinose to somewhat granular. *Apothecia* not seen.

*Chemistry*: thallus and soralia C+ red, K–, KC–, Pd–, UV+ white; containing gyrophoric acid.

*Trapelia placodioides* is known from Great Britain, Europe, Scandinavia, Ukraine and North America (Coppins & James 1984; Foucard 1990; Nimis 1993; Kondratyuk *et al.* 1996; Brodo *et al.* 2001; Santesson *et al.* 2004; Sérusiaux *et al.* 2004; Purvis *et al.* 2009; Esslinger 2011). It is characterized by the saxicolous habit, the whitish, spreading, areolate-cracked to continuous thallus, pale greenish white to whitish soralia developing from margins of areolae and thallus cracks at first but later becoming confluent, and gyrophoric acid (C+ red) in the medulla, the reaction given most strikingly by soralia. It grows on iron-rich substrata, and in southern New Zealand it is locally common on both concrete and acid stone grave surrounds below rusting iron railings (100–140 years old) in both Southern and Northern Cemeteries, Dunedin's oldest graveyards, and in Napier Cemetery. In those mineralized environments it associates with the lichens *Acarospora sinopica*, *Candelariella vitellina*, *Lecanora epanora*, *L. polytropa*, *Physcia undulata* and *Placopsis perrugosa*. The Timaru record is from the top of an old stone wall and again below rusting iron railings. The species is also new to the Southern Hemisphere.

#### SPECIMENS EXAMINED

*Hawkes Bay*: • Napier Cemetery, on concrete surround of grave below old iron railings [Archie Galloway's grave, ?1873], 50 m, D.J. Galloway 8019 (CHR 528355), 11 xi. 2011. *Canterbury*: • Timaru, The Bay Hill, on top of old stone wall, below rusting iron railing, 15 m, D.J. Galloway 8127 (CHR 528396), 7.v.2011. *Otago*: • Northern Cemetery, Dunedin, on horizontal and vertical concrete grave surrounds below old rusting iron railings, D.J. Galloway 8125, 6.x.2009; D.J. Galloway 8132, 18.iv.2010; D.J. Galloway 8126 (CHR 528213, 528354, 528214), 21.iv.2010.

#### Acknowledgements

We thank Prof. Jack Elix (Canberra) for confirming the identity of *Flavoparmelia hay-somii*, and for invaluable help with chemistry, Dr Javier Etayo (Pamplona) for identifying *Paranectria alstrupii* and *Phacopsis fusca*, Dr Ervo Vitikainen (Helsinki) for identifying *Peltigera elisabethae*, Margot Bowden and E Doonerwind (Landcare Research Library, Lincoln), Dr Sean Pennycook (Landcare Research, Auckland) and Prof. Mikhail Zhurbenko (St Petersburg) for help with literature, and Stephen Stock, John Timmins, Patricia Payne and Lily the lichen dog (Dunedin) for companionship in the field.

#### References

- Alstrup, V (1979): Notes on selected Greenlandic lichens. *Botanisk Tidsskrift* 74, 223–229.
- Alstrup, V; Kocourková, J; Kukwa, M; Motiejūnaite, J; von Brackel, W; Suija, A (2009): The lichens and lichenicolous fungi of South Greenland. *Folia Cryptogamica Estonica* 46, 1–24.
- Aragón, G; Otálora, MAG; Martínez, I (2005): New data on the lichen genus *Leptogium* (lichenized ascomycetes) in the Iberian Peninsula. *Nova Hedwigia* 80, 199–226.
- Ariño, X; Gomez-Bolea, A; Suiz-Jimenez, C (1997): Lichens on ancient mortars. *International Biodeterioration and Biodegradation* 4, 217–224.
- Asahina, Y (1958): Lichenologische Notizen (137–139). *Journal of Japanese Botany* 33, 65–69.
- Baniya, CB; Solhøy, T; Gauslaa, Y; Palmer, MW (2010): The elevation gradient of lichen species richness in Nepal. *Lichenologist* 42, 83–96.
- Baumgärtner, H (1979): Revision der europäischen Arten der Gattung *Toninia* (Massal.) ampl. Th.Fr. [thesis, 1967]. München, 76 pp.
- Björk, CR (2010): Additions to the lichen flora of Washington State, United States. I. *Evansia* 27, 18–20.
- Brodo, IM; Duran-Sharnoff, S; Sharnoff, S (2001): *Lichens of North America*. Yale University Press, New Haven and London.
- Buschardt, A (1979): Zur Flechtenflora der inneralpen Trockentäler unter besonderer Berücksichtigung des Vinschgau. *Bibliotheca Lichenologica* 120, 1–419.
- Christiansen, MS; Ramkaer, K; Rose, F; Søchting, U (1979): Additions to the Danish flora. *Botanisk Tidsskrift* 74, 89–115.
- Coppins, BJ; James, PW (1984): New or interesting British lichens V. *Lichenologist* 16, 241–264.
- Coppins, BJ; Fryday, AM (2006): Reassessment of some lichen species described by Josiah Lowe, and notes on some other North American lecideoid lichens. *Bryologist* 109, 9–17.
- Cox, SC; Barrell, DJA (compilers) (2007): *Geology of the Aoraki area*. Institute of Geological & Nuclear Sciences 1, 250 000 map 15. 1 sheet + 71 pp. GNS Science, Lower Hutt.
- Diederich, P (2003): New species and new records of American lichenicolous fungi. *Herzogia* 16, 41–90.
- Doré, CJ; Cole, MS; Hawksworth, DL (2006): Preliminary statistical studies of the infraspecific variation in the ascospores of *Nesolechia oxyspora* growing on different genera of parmelioid lichens. *Lichenologist* 38, 425–434.
- Edwards, B; Aptroot, A; Hawksworth, DL; James, P (2009): *Lecanora*. In Smith, CW; Aptroot, A; Coppins, BJ; Fletcher, A; Gilbert, OL; James, PW; Wolseley, PA (eds) *The Lichens of Great Britain and Ireland*, pp. 465–502. The British Lichen Society, London.
- Egea, JM (1996): Catalogue of lichenized and lichenicolous fungi of Morocco. *Bocconea* 6, 19–114.
- Eigler, G (1969): Studien der Gliederung der Flechtengattung *Lecanora*. *Dissertationes Botanicae* 4, 1–195.
- Esslinger, TL (2011): A cumulative checklist for the lichen-forming, lichenicolous, and allied fungi of the continental United States and Canada. North Dakota State University. (First posted 1 December 1997; most recent version (#17) 16 May, 2011),

- Fargo, North Dakota. <http://www.ndsu.nodak.edu/instruct/esslinge/chcklst/chchcklst7.htm>
- Etayo, J (2010): Hongos liquenícolas de Perú. Homenaje a Rolf Santesson. *Bulletin de la Société linnéenne de Provence* **61**, 83–128.
- Fletcher, A; Purvis, OW; Coppins, BJ (2009): *Aspicilia*. In Smith, CW; Aptroot, A; Coppins, BJ; Fletcher, A; Gilbert, OL; James, PW; Wolseley, PA (eds) *The Lichens of Great Britain and Ireland*, pp. 181–188. The British Lichen Society, London.
- Foucard, T (1990): *Svensk Skorplavs Flora*. Interpublishing, Stockholm.
- Fries, TM (1874): *Lichenographica Scandinavica sive dispositio in Dania, Suecia, Norvegia, Fennia, Lapponica, Rossica havtenus collectorum*. Pars Secunda. Ed. Berling, Upsaliae.
- Fryday, AM (2001a): The lichen vegetation associated with areas of late snow-lie in the Scottish Highlands. *Lichenologist* **33**, 121–150.
- Fryday, AM (2001b): Phytosociology of terricolous lichen vegetation in the Cairngorm Mountains, Scotland. *Lichenologist* **33**, 331–351.
- Galloway, DJ (2000): The lichen genus *Peltigera* (Peltigerales: Ascomycota) in New Zealand. *Tuhinga* **11**, 1–45.
- Galun, M; Mukhtar, A (1996): Checklist of the lichens of Israel. *Bocconea* **6**, 149–171.
- Gilbert, OL; Fox, BW (1985): Lichens of high-ground in the Cairngorm Mountains, Scotland. *Lichenologist* **17**, 51–66.
- Gilbert, OL; Fryday, AM; Giavarini, VJ; Coppins, BJ (1992): The lichen vegetation of high-ground in the Ben Nevis Range, Scotland. *Lichenologist* **24**, 43–56.
- Gilbert, O[L] (2000): *Lichens. The New Naturalist* Vol. **86**. Harper Collins, London.
- Gilbert, OL; Jørgensen, PM (2009): *Leptogium*. In Smith, CW; Aptroot, A; Coppins, BJ; Fletcher, A; Gilbert, OL; James, PW; Wolseley, PA (eds) *The Lichens of Great Britain and Ireland*, pp. 541–551. The British Lichen Society, London.
- Goward, T; McCune, B; Meidinger, D (1994): *The lichens of British Columbia Illustrated keys. Part 1 – foliose and squamulose species*. Ministry of Forests Research Program, Victoria, B.C.
- Hafellner, J (1991): Die Gattung *Aspicilia*, ihre Ableitung nebst Bemerkungen über cryptolecanorine Ascocarporization bei anderen Genera der Lecanorales (Ascomycetes lichenisati). *Acta Botanica Malacitana* **16**, 133–140.
- Hafellner, J; Türk, R (2001): Die lichenisierten Pilze Österreichs – eine Checkliste der bisher nachgewiesenen Arten mit Verbreitungsangaben. *Stapfia* **76**, 3–167.
- Halici, MG; Aksoy, A (2009): Lichenised and lichenicolous fungi of Aldağlar National Park (Niğde, Kayseri and Adana Provinces) in Turkey. *Turkish Journal of Botany* **33**, 169–189.
- Hermann, S; Leuckert, C; Poelt, J (1973): Zur Kenntnis der Flechtengruppe *Lecanora radiosa* s. ampliss. *Willdenowia* **7**, 9–30.
- Hertel, H; Rambold, G (1995): On the genus *Adelolecia* (lichenized Ascomycotina, Lecanorales). *Bibliotheca Lichenologica* **57**, 211–230.
- Hertel, H (2001): Floristic and taxonomic notes on saxicolous lecideoid lichens. *Sendtnera* **7**, 93–136.
- Hertel, H (2009): A new key to cryptothalline species of the genus *Lecidea* (Lecanorales). *Bibliotheca Lichenologica* **99**, 185–204.
- Hinds, JW; Fryday, AM; Dibble, AC (2009): Lichens and bryophytes of the alpine and subalpine zones on Katahdin, Maine II: Lichens. *Bryologist* **112**, 673–703.
- Hitch, CJB; Fletcher, A; James, PW; Purvis, OW (2009a): *Peltigera*. In Smith, CW; Aptroot, A; Coppins, BJ; Fletcher, A; Gilbert, OL; James, PW; Wolseley, PA (eds) *The Lichens of Great Britain and Ireland*, pp. 664–673. The British Lichen Society, London.
- Hitch, CJB; Timdal, E; James, PW (2009b): *Toninia*. In Smith, CW; Aptroot, A; Coppins, BJ; Fletcher, A; Gilbert, OL; James, PW; Wolseley, PA (eds) *The Lichens of Great Britain and Ireland*, pp. 895–903. The British Lichen Society, London.
- Holtan-Hartwig, J (1993): The lichen genus *Peltigera*, exclusive of the *P. canina* group, in Norway. *Sommerfeltia* **15**, 1–77.
- John, V (1996): Preliminary catalogue of lichenized and lichenicolous fungi of Mediterranean Turkey. *Bocconea* **6**, 173–216.
- John, V; Seaward, MRD; Sipman, HJM; Zedda, L (2004): Lichens and lichenicolous fungi of Syria, including a first checklist. *Herzogia* **17**, 157–177.
- Jørgensen, PM (1994): Further notes on European taxa of the lichen genus *Leptogium*, with emphasis on the small species. *Lichenologist* **26**, 1–29.
- Jørgensen, PM (2007): *Collemataceae*. *Nordic Lichen Flora* **3**, 14–42.
- Kidron, GJ; Temina, M (2010): Lichen colonization on cobbles in the Negev Desert following 15 years in the field. *Geomicrobiology Journal* **27**, 455–463.
- Kocakaya, M; Halici, MG; Aksoy, A (2009): Lichens and lichenicolous fungi of Kizildağ (Derebucak, Konya). *Turkish Journal of Botany* **33**, 105–112.
- Kondratyuk, S; Navrotskaya, I; Khodosovtsev, A; Solonina, O (1996): Checklist of Ukrainian lichens. *Bocconea* **6**, 217–294.
- Kristinsson, H; Zhurbenko, M; Hansen, ES (2010): Panarctic Checklist. Lichens and lichenicolous fungi. *CAFF Technical Report* **20**. CAFF International Secretariat, Akureyri.
- Kudratov, I; Mayrhofer, H (2002): Catalogue of the lichenized and lichenicolous fungi of Tajikistan. *Herzogia* **15**, 91–128.
- Kurokawa, S (2003): *Checklist of Japanese Lichens*. National Science Museum, Tokyo.
- Lawrey, JD; Diederich, P (2011): *Lichenicolous fungi – worldwide checklist including isolated cultures and sequences available*. Version 10 April, 2011. <http://www.lichenicolous.net>
- Llimona, X; Hladun, NL (2001): Checklist of the lichens and lichenicolous fungi of the Iberian Peninsula and Balearic Islands. *Bocconea* **14**, 1–581.
- Lumbsch, HT; Huhndorf, SM (eds) (2010): *Myconet Volume 14, Part One. Outline of Ascomycota - 2009. Fieldiana: Life and Earth Sciences, N.S.* **1**, 1–42.
- Magnusson, AH (1940): Lichens from Central Asia I. *Reports from the Scientific Expedition to the North-Western Provinces of China under the leadership of Dr. Sven Hedin – The Sino-Swedish Expedition – Publication* **13**. XI. Botany **1**, 1–168. Aktiebolaget Thule, Stockholm.
- Martínez, I; Burgaz, AR; Vitikainen, O; Escudero, A (2004): Distribution patterns in the genus *Peltigera* Willd. *Lichenologist* **35**, 301–323.
- McCarthy, PM (2011): *Checklist of Australian Lichenicolous Fungi*. Australian Biological Resources Study, Canberra. Version 18 October, 2011. <http://www.anbg.gov.au/abrs/lichenlist/LichenicolousFungi.html>
- Moon, KH; Kashiwadani, H (2009): *Lobothallia alphoplaca* (Wahlenb.) Hafellner (*Megasporaceae*) found in Korea. *Journal of Japanese Botany* **84**, 303–305.
- Muchnik, EE; Urbanavichus, GP (2001): A record of *Leptogium schraderi* (Collemataceae, Lichenes) in Russia. [Russian] *Botanicheskii Zhurnal* (St. Petersburg) **86**, 120–121.
- Nimis, PL; Poelt, J (1987): The lichens and lichenicolous fungi of Sardinia (Italy), an annotated list. *Studia Geobotanica* **7**, Suppl. 1, 1–269.
- Nimis, PL (1993): The lichens of Italy. An annotated catalogue. *Museo Regionale di Scienze Naturali Torino, Monografia* **12**, 1–897.
- Nimis, PL; Martellos, S (2003): A second checklist of the lichens of Italy with a thesaurus of synonyms. *Museo Regionale di Scienze Naturali, Saint-Pierre, Valle d'Aosta. Monografie* **4**, 1–192.
- Nylander, W (1860): Novitiae quaedam Lichenaea Norvegicae. *Öfversigt af Kongliga Svenska Vetenskaps-Academiens Förhandlingar* **17**, 295–297.
- Peršoh, D; Kainz, C (2004): *Phacopsis*. In Nash III, TH; Ryan, BD; Diederich, P; Gries, C; Bungartz, F (eds) *Lichen Flora of the Greater Sonoran Desert Region* **2**, 679–680. Lichens Unlimited, Tempe.
- Poelt, J (1974): *Bestimmungsschlüssel Europäischer Flechten*. J. Cramer, Vaduz.
- Purvis, OW; Coppins, BJ; Wolseley, PA; Fletcher, A (2009): *Trapelia*. In Smith, CW; Aptroot, A; Coppins, BJ; Fletcher, A; Gilbert, OL; James, PW; Wolseley, PA (eds) *The Lichens of Great Britain and Ireland*, pp. 904–908. The British Lichen Society, London.

- Pykälä, J (2010): Additions to the lichen flora of Finland. V. *Graphis Scripta* **22**, 54–62.
- Renobales, G (1996): Contribucion al conocimiento de los líquenes calcícolas del occidente de Vizcaya y parte oriental de Cantabria (N-España). *Guineana* **2**, 1–310.
- Ruprecht, U; Lumbsch, HT; Brunbauer, G; Green, TGA; Türk, R (2010): Diversity of *Lecidea* (Lecideaceae, Ascomycota) species revealed by molecular data and morphological characters. *Antarctic Science* **22**, 727–741.
- Ryan, BD (2004): *Lobothallia*. In Nash III, TH; Ryan, BD; Diederich, P; Gries, C; Bungartz, F (eds) *Lichen Flora of the Greater Sonoran Desert Region* **2**, 352–357. Lichens Unlimited, Tempe.
- Santesson, R; Moberg, R; Nordin, A; Tønsberg, T; Vitikainen, O (2004): *Lichen-forming and lichenicolous fungi of Fennoscandia*. Museum of Evolution, Uppsala University, Uppsala.
- Scholz, P (2000): Katalog der Flechten und flechtenbewohnenden Pilze Deutschlands. *Schriftenreihe für Vegetationskunde* **31**, 1–298.
- Seaward, MRD (1996): Checklist of Tunisian lichens. *Bocconea* **6**, 115–148.
- Seaward, MRD; Sipman, HJM; Schultz, M; Maassoumi, AA; Haji Moniri Anbaran, M; Sohrabi, M (2004): A preliminary lichen checklist for Iran. *Willdenowia* **34**, 543–576.
- Sérusiaux, E; Diederich, P; Lambinon, J (2004): Les macrolichens de Belgique, du Luxembourg et du nord de la France. *Ferrantia* **40**, 1–188.
- Spribile, T; Schultz, M; Breuss, O; Bergmeier, E (2006): Notes on the lichens and lichenicolous fungi of western Crete (Greece). *Herzogia* **19**, 125–148.
- Spribile, T; Pérez-Ortega, S; Tønsberg, T; Schirokauer, D (2010): Lichens and lichenicolous fungi of the Klondike Gold Rush National Historic Park, Alaska, in a global biodiversity context. *Bryologist* **113**, 439–515.
- St. Clair, LL (1999): *A color guidebook to common Rocky Mountain lichens*. M.L. Bean Life Science Museum, Brigham Young University, Provo.
- Temina, M; Wasser, SP; Nevo, E (2004): New records of lichenized fungi from the Near East. *Mycologia Balcanica* **1**, 139–151.
- Thor, G; Arvidsson, L (eds) (1999): *Rödliste lavar I Sverige – Artfacta [Swedish Red Data Book of Lichens]*. Art Databanken. SLU, Uppsala.
- Timdal, E (1986): A revision of *Psora* (Lecideaceae) in North America. *Bryologist* **89**, 253–275.
- Timdal, E (1991): A monograph of the genus *Toninia*. *Opera Botanica* **110**, 1–137.
- Timdal, E (2002): *Psora*. In Nash III, TH; Ryan, BD; Gries, C; Bungartz, F (eds) *Lichen Flora of the Greater Sonoran Desert Region* **1**, 418–430. Lichens Unlimited, Tempe.
- Triebel, D; Rambold, G; Elix, JA (1995): A conspectus of the genus *Phacopsis*. *Bryologist* **98**, 71–83.
- Vitikainen, O (1994): Taxonomic revision of *Peltigera* (lichenized Ascomycotina) in Europe. *Acta Botanica Fennica* **152**, 1–96.
- Vitikainen, O (2007): Peltigeraceae. *Nordic Lichen Flora* **3**, 113–131.
- Vondrák, J; Etayo, J (2007): A contribution to the diversity of lichen-forming and lichenicolous fungi in the Spanish Pyrenees. *Herzogia* **20**, 189–198.
- Vondrák, J; Palice, Z; Khodosovtsev, A; Postoyalkin, S (2010): Additions to the diversity of rare or overlooked lichens and lichenicolous fungi in Ukrainian Carpathians. *Chornomors'kyi Botanichnyi Zhurnal* **6**, 6–34.
- Wei, JC (1991): *An enumeration of lichens in China*. International Academic Publishers, Beijing.
- Yazici, K; Aptroot, A; Aslan, A; Etayo, J; Spier, L; Karagöz, Y (2010): [Summary] Lichenized and lichenicolous fungi from nine different areas in Turkey. *Mycotaxon* **111**, 113–116.
- Yazici, K; Aptroot, A; Aslan, A; Vitikainen, O; Piercey-Normore, MD (2011): Lichen biota of Ardahan province (Turkey). *Mycotaxon* **116**, 480 (on-line link page).
- Zahlbruckner, A (1907): Lichenes. In *Die natürlichen Pflanzenfamilien...* (eds A. Engler & K. Prantl) I. Teil. 1. Abteilung. Wilhelm Engelmann, Leipzig.
- Zahlbruckner, A (1930): Lichenes (Übersicht über sämtliche bisher aus China bekannten Flechten). In Handel-Mazetti, H (ed.) *Symbolae Sinicae. Botanische Ergebnisse der Expedition der Akademie der Wissenschaften in Wien nach Südwest-China 1914–1918*. **III**, J. Springer, Wien.
- Zhdanov, I (2010): New and rare lichen records from the Central Siberian Biosphere Reserve (Krasnoyarsk Krai, Russia). *Folia Cryptogamica Estonica* **47**, 101–104.
- Zhurbenko, M (2009): New and interesting lichenicolous hypocrealean fungi from the Northern Hemisphere. *Sydowia* **61**, 177–188.
- Zhurbenko, M; Dillman, K (2010): *Polycoccum hymeniicola* comb. nov. (Dacampiaceae) and other interesting lichenicolous fungi from southeastern Alaska. *Bryologist* **113**, 260–266.

**A new species of *Megalaria* (Ramalinaceae, lichenized Ascomycota) from South Island, New Zealand**

**Alan M. Fryday**

Herbarium, Dept of Plant Biology, Michigan State University,  
East Lansing, MI 48824–1312, U.S.A.  
email: fryday@msu.edu

**Allison Knight**

Department of Botany, University of Otago  
PO Box 56, Dunedin, 9054, New Zealand  
email: allison.knight@botany.otago.ac.nz

**Abstract:**

The new species *Megalaria orokonuiana* Fryday & A.Knight is described from a single locality in the Orokonui Ecosanctuary near Dunedin, South Island, New Zealand.

**Introduction**

The genus *Megalaria* Hafellner was erected for the single species *M. grossa* (Pers. ex Nyl.) Hafellner (Hafellner 1984), but it has subsequently been enlarged by the addition of numerous other morphologically similar taxa (Schreiner & Hafellner 1992; Nimis 1993; Ekman & Tønsberg 1996; Fryday 2004a, b; Galloway 2004; Fryday 2007; Kalb 2007; Lendemer 2007; Kantvilas 2008; Fryday & Lendemer 2010). Ekman & Tønsberg (1996) reviewed the genus, and concluded that although there were differences in ascus structure, and other minor distinctions, between *M. grossa* and the other species assigned to the genus, there was little to be gained from a monotypic *Megalaria*, and all the species should be retained in *Megalaria* pending a full morphological/molecular revision. Ekman (2001) provided evidence based on molecular data that *M. grossa* and *M. laureri* (Hepp ex Th.Fr.) Hafellner formed a monophyletic group, although with moderate bootstrap support (72%) and rather long branch length.

The broadly circumscribed *Megalaria* was upset by Kalb (2007), who erected the new genus *Catillochroma* to accommodate *Lecanora endochroma* Fée and putative related species, including *C. melanotropa* (Nyl.) Kalb and *C. pulverea* (Borrer) Kalb, both known from New Zealand and previously included in *Megalaria*. However, Fryday & Lendemer (2010) showed that the two characters used to define *Catillochroma*, exciple anatomy and thalline chemistry, are variable and contradictory, with a number of intermediates, and consequently they reduced *Catillochroma* to synonymy with *Megalaria*. The genus currently consists of c. 30 species (Kirk *et al.* 2008, Fryday & Lendemer 2010), and is known from tropical, temperate and subpolar regions.

*Megalaria* is widely distributed in the Southern Hemisphere, but has received little attention from lichenologists (Lamb 1955; Fryday 2004b, 2007; Kantvilas 2008). The situation is not helped by the numerous old names in *Catillaria* A.Massal., many of which are probably assignable to species of *Megalaria*. The understanding of the genus in New Zealand was further complicated by the transfer of many species to *Megalaria* from *Catillaria* by Galloway (2004, 2007). Fryday & Lendemer (2010) investigated those species, and concluded that *Megalaria semipallida* (C.Knight) D.J.Galloway had already been included in the synonymy of *Micarea denigrata* by Czarnota (2007), *Megalaria subcarnea* (Müll.Arg.) D.J.Galloway was most probably a species of *Coenogonium*, and possibly an earlier name for *Coenogonium rubrofusca* (Vězda & Malcolm) Malcolm, and *Megalaria variegata* (Müll.Arg.) D.J.Galloway is *Cliostomum griffithii* (Sm.) Coppins.

Here, a distinctive species of *Megalaria* with a granular-isidiate thallus and relatively large ascospores is described from the South Island of New Zealand.

**Material and methods**

The specimens were studied using standard microscopic techniques. The macro image of *M. orokonuiana* in Fig. 1 was created from multiple images stacked using

Photoshop CS5. Chemical constituents were identified by thin-layer chromatography (Orange *et al.* 2001). Nomenclature for apothecial pigments follows Meyer & Printzen (2000).

***Megalaria orokonuiana*** Fryday & A.Knight sp. nov.  
Mycobank No.: **MB 564457**

Figs 1, 2

Ab omnibus speciebus generis *Megalariae*, thallo granular-to-corallino, hypothecio supero ruber-brunneo (K+ purpureo) inferno hyalino, ascosporis 25–30 × 12–14 µm.

*Typus*: New Zealand, South Island, Dunedin, Orokonui Ecosanctuary, bark, base of trunk, kanuka grove, 45°46'S, 170°36'E, 236 m, *A. Knight s.n.*, 12.vi.2010 (holotypus–OTA 60695; isotypus–MSC).

*Thallus* effuse, without a distinct margin, 0.2–0.25 mm thick, composed of aggregated olivaceous, grey-brown, coralloid granular isidia, 0.1–0.15 mm diam. *Photobiont* green, cells irregular, 5–7 µm across. *Apothecia* scattered, black, 1–2.5 mm diam, flat to slightly concave with a smooth, thin (0.1 mm) proper margin, becoming slightly convex and immarginate when mature. *Thecium* 120–140 µm tall, composed of thin (1 µm wide), simple paraphyses, not swollen at the apex; separating in K but ±conglutinate at the epihyemium; epihyemium dark olivaceous grey (K+ blue-black, H+ bright blue, N+ red; *cinereorufa*-green). *Hypothecium* upper layer reddish brown (K+ magenta, H+ brown, N+ orange-brown, atra-red) extending into the lower thecium; lower layer hyaline, composed of randomly arranged hyphae. *Ascus* *Biatora*-type, cylindrical, 100–120 × 30–35 µm; *ascospores* 1-septate, broadly ellipsoid, (20–)25–30 × 12–14 µm. *Exciple* cupular, 75–120 µm wide laterally, blue-black (K+ blue-black, H+ bright blue, N+ red, *cinereorufa*-green), outer 5–20 µm unpigmented, composed of radiating hyphae, c. 1 µm wide but with a thick coat 7–10(–12) µm wide (*cf.* Fryday & Lendemer 2010, Fig 4A). *Conidiomata* not observed.

*Chemistry*: K–, C–, Pd–. TLC: UV yellow (UVC++ yellow) spot at Rf 5.5 in solvent C (probably a terpenoid from the substratum).

**Distribution**

Known only from the type collection.

**Remarks**

The only other Southern Hemisphere *Megalaria* with a granular-isidiate thallus known to us is *M. spodophana* (Nyl.) D.J.Galloway, known only from the type collection in 1888, but that species has much smaller ascospores (15–17 × 6–8.3 µm, Galloway 1985). *Megalaria* species with a similar thallus from other parts of the world also have much smaller ascospores (<20 µm long; e.g., *M. brodoana* Ekman & Tønsberg from North America and *M. bengalensis* Jagadeesh, Aptroot, G.P.Sinha & Kr.P.Singh from India).

The climate at the type locality is cool-temperate, with annual rainfall 800–1200 mm supplemented by frequent coastal mists. The specimen was found on the moist base of kanuka (*Kunzea ericoides* var. *ericoides*) in moderate shade on a W-facing slope in a lichen-rich grove of kanuka. Associated species include *Chrysothrix candelaris*, *Cladia aggregata*, *Cladonia darwinii*, *Cladonia pyxidata*, *Hypogymnia subphysodes*, *Menegazzia neozelandica*, *Menegazzia nothofagi*, *Menegazzia subpertusa*, *Pannaria farinosa*, *Parmelinopsis afroevoluta*, *Parmotrema perlatum*, *Pseudocyphellaria glabra*, *Psoroma melanizum*, *Punctelia subflava*, *Usnea cornuta* and *Usnea rubicunda*.

**Acknowledgements**

We thank Leena Myllys for the loan of the type specimen of *Lecidea spodophana* from H-Nyl.

## References

- Czarnota, P (2007): The lichen genus *Micarea* (Lecanorales, Ascomycota) in Poland. *Polish Botanical Studies* **23**, 1–199.
- Ekman, S; Tønsberg, T (1996): A new species of *Megalaria* from the North American west coast, and notes on the generic circumscription. *Bryologist* **99**, 34–40.
- Ekman, S (2001): Molecular phylogeny of the Bacidiaceae (Lecanorales, lichenized Ascomycota). *Mycological Research* **105**, 783–797.
- Fryday, AM (2004a): A new species of *Fuscopannaria* with a green photobiont, and other taxonomic innovations and new records of lichenized fungi from Alaska. *Bryologist* **107**, 173–179.
- Fryday, AM (2004b): New species and records of lichenized fungi from Campbell Island and the Auckland Islands, New Zealand. *Bibliotheca Lichenologica* **88**, 127–146.
- Fryday, AM (2007): A new species of *Megalaria* from Îles Kerguelen in the southern Indian Ocean. *Lichenologist* **39**, 371–375.
- Fryday, AM; Lendemer, JC (2010): Reassessment of the genus *Catillochroma* (lichenized Ascomycota, Ramalinaceae). *Lichenologist* **42**, 587–600.
- Galloway, DJ (1985): *The Flora of New Zealand Lichens*. Government Printer, Wellington.
- Galloway, DJ (2004): New lichen taxa and names in the New Zealand mycobiota. *New Zealand Journal of Botany* **42**, 105–120.
- Galloway, DJ (2007): *Flora of New Zealand Lichens. Revised Second Edition Including Lichen-Forming and Lichenicolous Fungi*. Manaaki Whenua Press, Lincoln, New Zealand.
- Hafellner, J (1984): Studien in Richtung einer natürlicheren Gliederung der Sammelfamilien Lecanoraceae und Lecideaceae. *Beiheft zur Nova Hedwigia* **79**, 241–371.
- Kalb, K (2007): New or otherwise interesting lichens. *Bibliotheca Lichenologica* **95**, 297–316.
- Kantvilas, G (2008): Observations on some Tasmanian species of the lichen genus *Megalaria* (Lecanorales: Megalariaceae). *Muelleria* **26**, 64–71.
- Kirk, PM; Cannon, PF; Stalpers, JA; Minter, DW (2008) *Dictionary of the Fungi*. Egham, UK: CABI.
- Lamb, IM (1955): New lichens from northern Patagonia, with notes on some related species. *Farlowia* **4**, 423–471.
- Lendemer, JC (2007): *Megalaria beechingii* (lichenized Ascomycota), a new species from eastern North America. *Opuscula Philolichenum* **4**, 39–44.
- Meyer, B; Printzen, C (2000): Proposal for a standardized nomenclature and characterization of insoluble lichen pigments. *Lichenologist* **32**, 571–583.
- Nimis, PL (1993): *The Lichens of Italy*. Museo Regionale di Scienze Naturali, Torino.
- Orange, A; James, PW; White, FJ (2001): *Microchemical Methods for the Identification of Lichens*. British Lichen Society, London.
- Schreiner, E; Hafellner, J (1992): Sorediöse, corticole Krustenflechten im Ostalpenraum. I. Die Flechtenstoffe und die gesicherte Verbreitung der besser bekannten Arten. *Bibliotheca Lichenologica* **45**, 1–291.

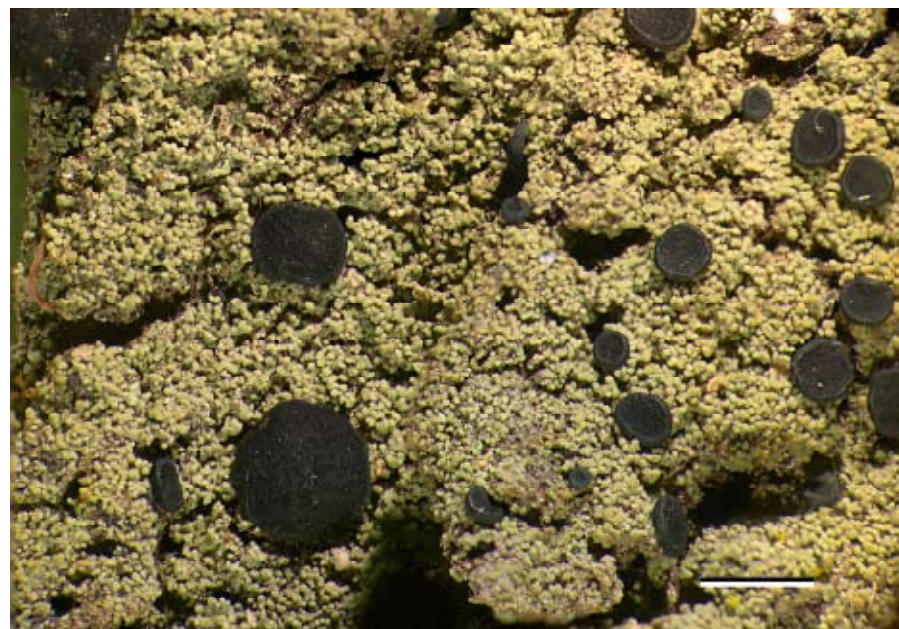


Fig. 1 *Megalaria orokonuiana*. Isotype. Bar = 1 mm.



Fig. 2 *Megalaria orokonuiana*. Holotype. Bar = 1 mm.

**Confirmation of *Ramalina microspora* Kremp.  
(Ramalinaceae, Ascomycota) for the Kermadec Islands**

**Dan Blanchon**

Department of Natural Sciences, Unitec Institute of Technology  
Private Bag 92025, Auckland, New Zealand  
e-mail: dblanchon@unitec.ac.nz

**Peter de Lange**

Ecosystems and Species Unit, Research and Development  
Department of Conservation, Private Bag 68908, Newton, Auckland, New Zealand

**Jennifer Bannister**

Department of Botany, University of Otago  
P.O. Box 56, Dunedin, New Zealand

**Abstract:**

*Ramalina microspora* Kremp. is confirmed for the Kermadec Islands.

**Introduction**

There is some confusion over the application of the name *Ramalina microspora* Kremp. for specimens from the Kermadec Islands (Fig. 1). Elix & McCarthy (1998) recorded the species for Macauley and North Meyer, based on Sykes (1977), who stated that the species was collected "on an exposed headland at the northern end of N. [North] Meyer in December 1966 and around the margins of the Macauley Plateau in November 1970". He also noted a collection from the leaves of *Myoporum obscurum* (now *M. rapense* subsp. *kermadecense*). The specimens were listed as being held at CHR. However, the gathering mentioned by Sykes (1977) from North Meyer appears to be missing. Galloway (1985) did not record the species in his *Flora* treatment, and Blanchon *et al.* (1996) did not mention the species in their revision of *Ramalina* for New Zealand. Specimens in CHR, originally labeled as *R. microspora* by Tom Rawson for Sykes were redetermined *R. geniculata* by Dan Blanchon. Bannister & Blanchon (2003) noted that specimens from the Kermadecs with inflated thalli were referred to *R. geniculata*, but that a few from AK, CHR and WELT were tentatively labeled as *R. cf. microspora*. Stevens (1987) and Bannister & Blanchon (2003) considered that *R. microspora* was restricted to the Hawaiian Islands. Jennifer Bannister (in Galloway 2007) recorded *R. microspora* from lava outcrops in scrub on Raoul Island, but because its exact status was apparently still in doubt, the taxon was not then included among the New Zealand species known at that time (Galloway 2007). Recently, Blanchon & de Lange (2011) reported *R. microspora* from Rarotonga. Re-examination of herbarium material from the Kermadec Islands shows that *R. microspora* is indeed present on Curtis, Cheeseman and Macauley Islands, and those records are noted below.

**Materials and methods**

Specimens examined from the Kermadec Islands were obtained from AK, CHR, and WELT, and Hawaiian material from MIN and MSC. The type of *Ramalina microspora* in W was also examined by JB, and a detailed photograph was obtained later (Fig. 2).

Chemical constituents were identified using standardized techniques of thin-layer chromatography (Culbertson 1972, White & James 1985). The description in this paper is based on material from Curtis, Cheeseman and Macauley Islands.

***Ramalina microspora* Kremp., Verhandl. Zool.-bot. Ges. Wien 26, 435 (1876)** Figs 2–6  
Type: Hawaiian Islands, Palí, auf felsen. *H. Wawra* 1738, 1868–1871 (W – holotype).

*Thallus* saxicolous, orange-brown, caespitose, 1–1.75 cm high. Branching dense, entangled, with many small lateral branches, anastomoses visible among branches; branches solid, narrow, terete or subterete to flattened (particularly at base), minor branch tips curled and slightly attenuate; branch 0.1–2.0 mm wide, surface pitted and

uneven; pseudocyphellae absent; holdfasts delimited, multiple, some blackened. *Apothecia* common, subterminal, marginal, laminal and some geniculate, disc 0.2–2.5 mm in diam., concave to plane when very young, with thick thalline margins, plane to convex and occluded when mature, obscuring the margin. *Ascospores* 8 per ascus, elliptical, 1-septate, 10–14 × 3–4 µm.  
*Chemistry*: divaricatic acid.

**Remarks**

The saxicolous *Ramalina microspora* is characterized by its densely branched caespitose thallus studded with subterminal and marginal apothecia and a secondary chemistry of divaricatic acid. Several other species contain medullary divaricatic acid, but they differ morphologically. *Ramalina geniculata* Hook.f. & Taylor, *R. inflata* subsp. *inflata* (Hook.f. & Taylor) Hook.f. & Taylor, *R. inflata* subsp. *australis* G.N.Stevens, and *R. inflata* subsp. *perpusilla* (Stirt.) G.N.Stevens are all inflated and perforate (Blanchon *et al.* 1996, Stevens 1987). The Japanese species *R. subbreviscula* Asahina has flattened branches and pseudocyphellae, and sometimes contains salazinic acid (Kashiwadani 1992). *Ramalina exiguella* Stirt. lacks perforations, but also lacks a medullary secondary chemistry. The species with the most similar morphology, *R. litorea* G.N.Stevens from Australia, Mauritius and Rodrigues Island, contains evernic rather than divaricatic acid (Stevens 1987).

Comparison of Kermadec material from AK and CHR with the type specimen from W (Fig. 2) and Hawaiian material from MIN and MSC (Fig. 3) shows the same caespitose habit, dense branching, anastomosing among branches, mixture of terete to flattened branching, pitted surface, lack of pseudocyphellae and soredia, subterminal/marginal apothecia, some of them geniculate, and discs ranging from concave when young to convex when larger. Specimens from Macauley Island (CHR 162670, CHR 162672, Fig. 4) are very similar to Hawaiian collections. Material from Curtis Island (AK 257905, AK 257906, Fig. 5) and Cheeseman Island (AK 325084, Fig. 6) closely resembles a specimen from Rarotonga (AK 323276) in being very robust, with wider, flatter branches than Hawaiian material. Some thalli from Curtis Island (AK 257906, Fig. 5) are dimorphic, with some branches broad and flattened but others narrow and terete and closely resembling Hawaiian material (Fig. 3).

Specimens from AK and CHR (e.g. AK 224399, AK 224393, CHR 211875) labeled as *Ramalina microspora* that are pale green and finely fistulose with occasional perforations are referable to *Ramalina geniculata*.

The confirmation of *Ramalina microspora* from the Kermadec Islands and Rarotonga (Blanchon & de Lange 2011) extends the range of the previously presumed Hawaiian endemic species across the Equator into the South Pacific. Bannister & Blanchon (2003) noted that the Kermadec Islands get winds from the direction of New Zealand in the winter and north-east from the Pacific in summer, with the species of *Ramalina* found on the islands reflecting that. The Kermadec Islands and Cook Islands share five species of *Ramalina* (*R. australiensis*, *R. luciae*, *R. microspora*, *R. pacifica* and *R. peruviana*). The Kermadec Islands and Hawaiian Islands also share five species (*R. australiensis*, *R. celastri*, *R. exiguella*, *R. microspora* and *R. peruviana*).

During recent field work on the Kermadec Islands (May 2011), one of us (Peter de Lange) did not find *Ramalina microspora* on Raoul Island or the Herald Islets, which are a cluster of eight islands, islets and rock stacks, and include both North and South Meyer. Therefore, in the apparent absence of a herbarium specimen, we suggest that the record of Sykes (1977) from North Meyer should for now be treated as doubtful, and that *Ramalina microspora* is known with certainty only from the three main southern islands of the Kermadec Islands group.

**SPECIMENS EXAMINED**

Kermadec Islands: *Macauley Island*: • Southern edge of plateau, 30°14'S, 178°26'W, 90 m, on boulder, W R. Sykes 1029/K, 22.xi.1970 (CHR 162670); *Curtis Island*: • Around fumaroles near summit, 30°33'S, 178°33'W, 120 m, G.A. Taylor, 10.xi.1989 (AK 257905,



AK 257906); • West side of island, 30°14'S, 178°26'W, 210 m, on rock, *W.R. Sykes 1038/K*, 28.xi.1970 (CHR 162672); *Cheeseman Island*: • Summit rock outcrops, southern side of island, 30°32'15.6"S, 178°34'0.61"W, c. 20 m, very common on the fringes of jagged, weathered sinter and similar hydrothermally altered rock, *P.J. de Lange K560*, 24.v.2011 (AK 325084).

Cook Islands: *Rarotonga*: • Muri Lagoon, Motu Oneroa, 21°14'S, 159°44'W, 1 m, on coral lying at the margin of beach and forest on a Motu, uncommon, *P.J. de Lange CK74*, 23.vii.2010 (AK 323276).

Hawaiian Islands: *Oahu*: • Pali, on rock, *A.A. Heller*, 23.iv.1895 (MIN 23351, MSC 92896).

#### Acknowledgements

We thank the curators and staff of AK, CHR, MIN, MSC, PDD and WELT for loans or access to specimens, and W for photographing the type specimen of *Ramalina microspora*. Peter J. de Lange thanks the crew of the RV *Braveheart*, especially Matt Jolly and Broughton Lattey, for assistance with landing on the smaller islands of the Kermadec Group, Warren Chinn, Tom Trnski, Mark McGrouther, Richie Robinson and Stephen Ullrich for assistance and company in the field on the islands, and the other members of the 2011 Kermadec Biodiscovery Expedition for their support. Peter also thanks Allan Ross and Don Newman, managers of Research and Development, National Office, Department of Conservation, for providing the funds to participate in the expedition. Jeremy Rolfe kindly prepared the map of the Kermadec Islands. We thank David Galloway for his constructive comments on the manuscript.

#### References

- Bannister, JM; Blanchon, DJ (2003): The lichen genus *Ramalina* Ach. (*Ramalinaceae*) on the outlying islands of the New Zealand geographic area. *Lichenologist* **35**, 137–146.
- Blanchon, DJ; Braggins, JE; Stewart, A (1996): The lichen genus *Ramalina* in New Zealand. *Journal of the Hattori Botanical Laboratory* **79**, 43–98.
- Blanchon, D; de Lange, P (2011): New records of *Ramalina* (*Ramalinaceae*: Ascomycota) from the Cook Islands. *Australasian Lichenology* **69**, 4–10.
- Culberson, CF (1972): Improved conditions and new data for the identification of lichen products by a standardized thin-layer chromatographic method. *Journal of Chromatography* **72**, 113–125.
- Elix, JA; McCarthy, PM (1998): Catalogue of the lichens of the Smaller Pacific Islands. *Bibliotheca Lichenologica* **70**, 1–361.
- Galloway, DJ (1985): *Flora of New Zealand Lichens*. Government Printer, Wellington.
- Galloway, DJ (2007): *Flora of New Zealand Lichens. Revised Second Edition Including Lichen-Forming and Lichenicolous Fungi*. Manaaki Whenua Press, Lincoln.
- Kashiwadani, H (1992): *Ramalina siliquosa* (Huds.) A.L.Sm. and *R. subbreviscula* Asah. in Japan. *Memoirs of the National Science Museum Tokyo* **25**, 63–69.
- Stevens, GN (1987): The lichen genus *Ramalina* in Australia. *Bulletin of the British Museum (Natural History), Botany Series*, **16**, 107–223.
- Sykes, WR (1977): Kermadec Islands Flora: An Annotated Check List. New Zealand Department of Scientific and Industrial Research Bulletin **219**. Wellington.
- White, FJ; James, PW (1985): A new guide to microchemical techniques for the identification of lichen substances. *British Lichen Society Bulletin* **57** (supplement), 1–40.

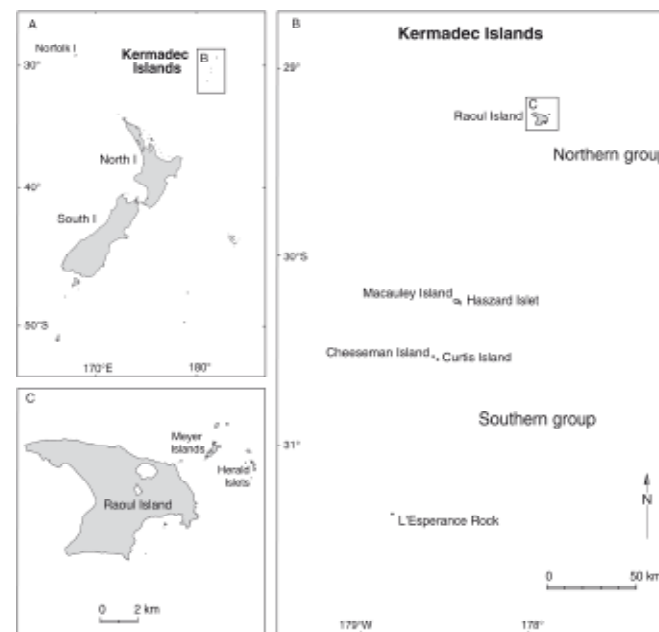


Fig. 1. The Kermadec Islands.



Fig. 2. *Ramalina microspora* (type specimen in W). Scale bar = 5 mm.



Fig. 3. *Ramalina microspora*, Hawaiian material (MSC 664729). Scale bar = 5 mm.



Fig. 5. *Ramalina microspora*, Curtis Island (AK 257906). Scale bar = 5 mm.



Fig. 4. *Ramalina microspora*, Macauley Island (CHR 162670). Scale bar = 5 mm.



Fig. 6. *Ramalina microspora* thalli on Cheeseman Island.

---

## BOOK REVIEW

---

David J. Galloway  
Landcare Research New Zealand Limited,  
Private Bag 1930, Dunedin, New Zealand  
gallowayd@LandcareResearch.co.nz

*Nordic Lichen Flora. Vol. 4 Parmeliaceae*, edited by Arne Thell and Roland Moberg. 184 pp., 1 locality map, 2 figures, 157 distribution maps and colour plates of all taxa, including a separate CD of the images. Published by Museum of Evolution, Uppsala University on behalf of Nordic Lichen Society, Zetterqvist tryckeri, Göteborg, 2011. ISBN 978-91-85221-24-0. Price: 275 SEK. (= \$NZ 49.80). Obtainable from Svenska botaniska föreningen (Swedish Botanical Society), <http://www.sbf.c.se/>

This is the fourth volume published by the Nordic Lichen Society in their multivolume series, *Nordic Lichen Flora*. The present volume, on the family *Parmeliaceae*, is edited by Arne Thell and Roland Moberg, under the imprimatur of the Editorial Committee, Teuvo Ahti, Starri Heiðmarsson, Per Magnus Jørgensen, Roland Moberg, Ulrik Søchting and Göran Thor. With contributions from Ted Ahti, Philippe Clerc, Jack Elix, Patrik Frödén, Håkon Holien, Ingvar Kärnefelt, Roland Moberg, Leena Myllys, Tiina Randlane, Arne Thell, Göran Thor, Saara Velmala and Martin Westberg, the volume is underpinned by experience, relevance and sound scholarship, making it a notable addition to a now firmly established series that is synonymous with clear, informative lichenology.

After a brief but relevant introduction to modern concepts of the family *Parmeliaceae* by Thell & Westberg (including a reconstructed phylogeny of the parmeliaceous genera occurring in Nordic countries), a dichotomous key to the genera treated prefaces the taxonomic accounts that comprise the bulk of the book (pp. 14–138). Taxa are arranged alphabetically by genus and alphabetically by species (and subspecific taxa) within each genus – 152 taxa in 41 genera being detailed. The following genera are discussed (the authors are noted in parentheses): *Alectoria* (Velmala & Myllys), *Allantoparmelia* (Westberg & Thell), *Allocetraria* (Randlane & Thell), *Arctocetraria* (Thell & Kärnefelt), *Arctoparmelia* (Moberg & Thell), *Asahinea* (Randlane & Thell), *Brodoa* (Thell & Westberg), *Bryocaulon* (Thell & Kärnefelt), *Bryoria* (Myllys, Velmala & Holien), *Cetraria* (Thell & Kärnefelt), *Cetrariella* (Thell & Kärnefelt), *Cetrelia* (Thell & Kärnefelt), *Cornicularia* (Thell & Kärnefelt), *Dactylina* (Thell & Kärnefelt), *Evernia* (Moberg & Thell), *Flavocetraria* (Randlane & Thell), *Flavoparmelia* (Moberg, Thell & Frödén), *Gowardia* (Velmala & Myllys), *Hypogymnia* (Westberg, Ahti & Thell), *Hypotrachyna* (Elix & Thell), *Imshaugia* (Moberg & Thell), *Letharia* (Moberg & Thell), *Masonhålea* (Thell), *Melanelia* (Westberg & Thell), *Melanelixia* (Westberg & Thell), *Melanohalea* (Westberg & Thell), *Menegazzia* (Westberg & Thell), *Parmelia* (Thell, Thor & Ahti), *Parmelina* (Thell), *Parmeliopsis* (Ahti, Moberg & Thell), *Parmotrema* (Elix & Thell), *Platismatia* (Thell), *Pleurosticta* (Westberg & Thell), *Pseudephebe* (Myllys, Velmala & Ahti), *Pseudevernia* (Ahti & Thell), *Punctelia* (Thell), *Tuckermannopsis* (Ahti & Thell), *Usnea* (Clerc), *Usnocetraria* (Thell), *Vulpicida* (Thell, Ahti & Randlane) and *Xanthoparmelia* (Elix & Thell).

Genera are given succinct modern circumscriptions, and short citations of relevant literature. A similar arrangement pertains for species within genera. A dichotomous key is given to genera within the *Parmeliaceae* as represented in Fennoscandia, and to species and subspecific taxa within genera. Details of chemistry (when known), habitat, and distributions (including a regional distribution map) are given for every species or subspecies, and informative notes are added for most of the 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 (those on the CD are brighter than the printed plates) to all taxa. A taxonomic Index provides details of all taxa mentioned, with accepted names in **boldface** and synonyms in *italics*.

Of the 152 taxa recorded in the *Nordic Lichen Flora*, 23 are also present in the Australasian lichen mycobiota, being either bipolar species (9 taxa in the genera *Cetraria*, *Cetrariella*, *Imshaugia*, *Parmeliopsis*, *Pseudephebe* and *Usnea*) from alpine to high-alpine biomes, or widely distributed cosmopolitan species (14 taxa in the genera *Flavoparmelia*, *Hypotrachyna*, *Parmelia*, *Parmelina*, *Parmotrema*, *Punctelia*, *Tuckermannopsis* and *Usnea*). It is a fascinating exercise comparing the present volume of the *Nordic Lichen Flora* with the *Parmeliaceae* volume of the *Flora of Australia* series (Grgurinovic 1994) and the *Flora of New Zealand Lichens* (Galloway 2007) to see similarities and differences in the family between northern and southern regions. This makes the volume a welcome addition to australasian lichenologists' bookshelves. The *Nordic Lichen Flora* series consolidates its reputation with the production of this attractive and useful work, and the editors, authors, photographers and printers deserve warm praise for their efforts. Printing is clear, easy to use (opened pages stay open), and errors are few and minor. I look forward with eager anticipation to the next volume.

### References

- Galloway, DJ (2007): *Flora of New Zealand Lichens. Revised second edition including lichen-forming and lichenicolous fungi*. Manaaki Whenua Press, Lincoln.  
Grgurinovic, C (1994): *Flora of Australia* Vol. 55, Lichens – Lecanorales 2, *Parmeliaceae*. Australian Biological Resources Study, Canberra.

- Amo de Paz, G; Lumbsch, HT; Cubas, P; Elix, JA; Crespo, A (2010): The genus *Karooowia* (Parmeliaceae, Ascomycota) includes unrelated clades nested within *Xanthoparmelia*. *Australian Systematic Botany* **23**, 173–184.
- Blanchon, D; de Lange, PJ; Bannister, J (2012): Confirmation of *Ramalina microspora* Kremp. (Ramalinaceae, Ascomycota) for the Kermadec Islands. *Australasian Lichenology* **70**, 30–35.
- Crespo, A; Ferencova, Z; Pérez-Ortega, S; Elix, JA; Divakar, PK (2010): *Austroparmelina*, a new Australian lineage in parmelioid lichens (Parmeliaceae, Ascomycota). *Systematics and Biodiversity* **8**, 209–221.
- Elix, JA (2012): Additional lichen records from Australia 74. *Australasian Lichenology* **70**, 3–13.
- Elvebakk, A; Robertsen, EH; Park, CH; Hong, SG (2010): *Psorophorus* and *Xanthoporsoma*, two new genera for yellow-green, corticolous and squamulose lichen species previously in *Psoroma*. *Lichenologist* **42**, 563–585.
- Fryday, AM (2011): How should we deal with the Antarctic and Subantarctic taxa published by Carroll William Dodge? *Opuscula Philolichenum* **9**, 89–98.
- Fryday, AM; Knight, A (2012): A new species of *Megalaria* (Ramalinaceae, lichenized Ascomycota) from South Island, New Zealand. *Australasian Lichenology* **70**, 26–29.
- Galloway, DJ; Ledingham, J (2012): Additional lichen records from New Zealand 48. *Australasian Lichenology* **70**, 14–25.
- Galloway, DJ (2012): REVIEW of *Nordic Lichen Flora, Vol. 4 Parmeliaceae*, edited by Arne Thell and Roland Moberg. *Australasian Lichenology* **70**, 36–37.
- Garibotti, I; Pissolito, C; Villalba, R (2011): Vegetation development on deglaciated rock outcrops from Glaciar Frías, Argentina. *Ártic, Antarctic, and Alpine Research* **43**, 35–45.
- Jørgensen, PM (2010): New discoveries in the lichen genus *Staurolemma* Körber. *Nova Hedwigia* **90**, 153–159.
- Kantvilas, G; Fryday, AM (2010): Two additions to the lichen genus *Cliostomum* Fr. (Ramalinaceae) with broad ascospores. *Lichenologist* **42**, 539–545.
- Kantvilas, G; Papong, K; Lumbsch, HT (2010): Further observations on the genus *Maronina*, with descriptions of two new taxa from Thailand. *Lichenologist* **42**, 557–561.
- Kantvilas, G; Stajsic, V (2011): *Arthonia banksiae* (lichenized Ascomycota) and its synonyms. *Muelleria* **29**, 27–32.
- Lücking, R; Rivas Plata, E; Kalb, K; Common, RS; Barcenos-Peña, A; Duya, MV (2011): *Halegrapha* (Ascomycota: Graphidaceae), an enigmatic new genus of tropical lichenized fungi dedicated to Mason E. Hale Jr. *Lichenologist* **43**, 331–343.
- Lumbsch, HT; Parmen, S; Rangsiruji, A; Elix, JA (2010): Phenotypic disparity and adaptive radiation in the genus *Cladia* (Lecanorales, Ascomycota). *Australian Systematic Botany* **23**, 239–247.
- Magain, N; Forrest, LL; Sérusiaux, E; Goffinet, B (2010): Microsatellite primers in the *Peltigera dolichorhiza* complex (lichenized ascomycete, Peltigerales). *American Journal of Botany* **97**, e102–e104.
- Oszczka, P; Olech, M (2011): A new species of the genus *Porpidia* from Antarctica. *Lichenologist* **45**, 367–371.
- Papong, K; Boonpragob, K; Lumbsch, HT (2011): A new species and new records of *Lecanora* (Lecanoraceae, Ascomycota) from south-east Asia. *Lichenologist* **43**, 47–50.
- Pérez Valcárcel, C; López de Silanes, ME; Paz-Bermúdez, G (2010): *Verrucaria mundula* P.M. McCarthy (Verrucariaceae, Ascomycota) — a new record for the Northern Hemisphere. *Bryologist* **113**, 267–271.
- Pino, A; Alimonti, A; Conti, ME; Bocca, B (2010): Iridium, platinum and rhodium baseline concentration in lichens from Tierra del Fuego (South Patagonia, Argentina). *Journal of Environmental Monitoring* **12**, 1857–1863.

---

## INFORMATION FOR SUBSCRIBERS

---

*Australasian Lichenology* is published twice a year, in January and July. Because of steadily rising printing and postage costs, copies are e-mailed to most subscribers as electronic .pdf files. Such files can be opened and read on either a PC or Macintosh computer using Adobe's Acrobat® Reader (version 5.0 or later). You can download a free copy of Acrobat Reader from Adobe's website ([www.adobe.com](http://www.adobe.com)). An electronic journal offers the advantage of not only requiring no shelf space but also of being searchable by computer. However, any subscriber who prefers hard-copies can print them out.

The journal is sent free to all electronic subscribers. To meet the requirement of the nomenclatural Code that printed descriptions of new taxa must be lodged in internationally recognized libraries and herbaria, a few selected library and herbaria subscribers will continue to get printed hard-copies

If you wish to subscribe electronically, simply e-mail your current e-mail address to the journal editor at <nancym@clear.net.nz> If you change your address, be sure to inform the editor by e-mail.

Volumes 58 and later can now be downloaded free from the website Recent Lichen Literature (RLL). The directory is <http://www.nhm.uio.no/botanisk/lav/RLL/AL/> Those same volumes plus searchable scans of Volumes 41–57 can be downloaded from [http://www.anbg.gov.au/abrs/lichenlist/Australasian\\_Lichenology.html](http://www.anbg.gov.au/abrs/lichenlist/Australasian_Lichenology.html)

---

## INFORMATION FOR AUTHORS

---

Research papers submitted to *Australasian Lichenology* must be original and on some aspect of Australasian lichens or allied fungi, and they are refereed. The journal also welcomes newsworthy items on lichenologists who are either studying Australasian lichens or who are visiting the region. A manuscript can be e-mailed to W. Malcolm at <nancym@clear.net.nz> as a text file saved in cross-platform "rich text format" (.rtf). See a recent issue for a guide to text formatting and reference citations.

Drawings should be inked originals, and photographs should be sharp and clear (prints will do but negatives or transparencies are preferred). Drawings and photographs can be air-mailed or else scanned at 600 dpi and then e-mailed as TIFF (.tif) or highest-quality JPEG (.jpg) files.

*Australasian Lichenology* provides electronic off-prints to authors as .pdf files. The journal does not ordinarily provide hard-copy off-prints, but off-prints of papers with colour plates can be purchased for NZ\$2.00 per copy per A5 plate if they're ordered when the manuscript is accepted for publication.

*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.