Cryptogamie, Bryologie, 2015, 36 (4): 349-368

New additions to the liverwort flora of subantarctic Macquarie Island

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Abstract – Sixteen species of liverworts, two of which are represented by non-type varieties only, are reported for the first time from subantarctic Macquarie Island. These are *Acrobolbus cinerascens* (Lehm.) Schiffn., *A. ochrophyllus* (Hook.f. *et* Taylor) R.M.Schust., *Andrewsianthus marionensis* (S.W.Arnell) Grolle, *Cephaloziella varians* (Gottsche) Steph., *Cryptolophocolea mitteniana* (Colenso) L.Söderstr. var. *obtusa* (J.J.Engel) L.Söderstr., *Herbertus oldfieldianus* (Steph.) Rodway, *Herzogobryum atrocapillum* (Hook.f. *et* Taylor) Grolle, *Isotachis montana* Colenso, *Lepidozia obtusiloba* Steph., *Lophocolea novaezeelandiae* (Lehm.) Nees var. *grandistipula* (Schiffn.) Váňa, *comb. nov*., *L. semiteres* (Lehm.) Mitt., *Metzgeria flavovirens* Colenso, *Radula aneurismalis* (Hook.f. *et* Taylor) Gottsche, Lindenb. *et* Nees, *Schistochila altissima* E.A.Hodgs., *Syzygiella teres* (Carrington *et* Pearson) Váňa and *Temnoma quadripartitum* (Hook.) Mitt. Considering these records, the liverwort flora of Macquarie Island now totals 62 species and, after South Georgia, it is the second richest flora of hepatics in the Subantarctic. One additional new combination, *Lophocolea novaezeelandiae* var. *meridionalis* (Steph.) Váňa, *comb. nov.*, is proposed.

Australasia / bryogeography / distribution / Macquarie Island / Marchantiophyta / Holantarctica / Southern Ocean / Subantarctic

INTRODUCTION

Macquarie Island (54°30'S, 158°57'E) is a small and highly isolated speck of land in the vast Southern Ocean situated in the Australian sector of the Subantarctic, south of the Tasman Sea. It measures 34 by 2.5-5.0 km and is 128 sq. km in surface area. The island is an emergent portion of the Macquarie Ridge, part of a complex of ridges and trenches of complex origin formed at the boundary between the Australian and Pacific tectonic plates. It is a seismically active area and many of the topographic features on the island result from seismicity (Christodoulou *et al.*, 1984; Crohn, 1986; Selkirk *et al.,* 1990). Politically, Macquarie Island is part of the Australian state of Tasmania. In 1978 it became a Tasmanian State Reserve and in 1995 a World Heritage Site.

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doi/10.7872/cryb/v36.iss4.2015.349

The physiography and biota of Macquarie Island have been presented in detail in a biological monograph of the island (Selkirk *et al*., 1990). The island rises steeply from the sea and at an altitude of 240-250 m a.s.l. is capped by a plateau with many peaks up to 370 m a.s.l. in the southern part and about 300 m a.s.l. in the northern part, with the highest peaks, in the southern part of the island, reaching 410 m a.s.l. The plateau is covered by shallow sediments and former beach deposits and there are numerous tarns and lakes. Because the island lies close but north of the oceanic Polar Frontal Zone, it has a cold, wet and windy climate, with a mean monthly minimum 2.8°C and a mean monthly maximum 6.2°C.

The vegetation of Macquarie Island has been described by Taylor (1955) and updated in Selkirk et al. (1990), who concluded that its present plant and animal inhabitants may be relative newcomers, as is the case on other subantarctic (Van der Putten *et al*., 2004, 2010) and antarctic islands (Birkenmajer *et al.*, 1985). Emergence of the island above the sea has been calculated at between 210 000 and 125 000 years before present (Selkirk *et al*., 1990), but may have been considerably earlier, between 700 000 and 600 000 years before present (Adamson *et al.,* 1996). The island was once thought to have been heavily glaciated during the last glacial maximum and the ice-sheet was believed to have covered the plateau and the rest of the island down to sea level (Mawson, 1943). However, more recent biological (Dodge, 1948; Gwynn, 1956; Selkirk *et al.,* 1998) and geological studies (Ivanac, 1948; Law & Burstall, 1956; Varne *et al.,* 1969; Colhoun & Goede, 1974; Löffler & Sullivan, 1980; Ledingham & Peterson, 1984; Adamson *et al.,* 1995, 1996) have questioned the extent of any glaciation. As is the case with other subantarctic islands, Macquarie Island does not support arborescent vegetation and the tallest plants are the tussock grass *Poa foliosa* (Hook.f.) Hook.f. and megaherb *Stilbocarpa polaris* (Hombr. *et* Jacquinot *ex* Hook.f.) A.Gray which predominate in herbfields on beach terraces and steep coastal slopes. The upper coastal slopes and plateau uplands are dominated by short-tussock grassland with *Agrostis magellanica* Lam., *Luzula crinita* Hook.f., and species of *Uncinia* Pers. which support many species of bryophytes and lichens. Much of the island's plateau is typically fellfield with vegetation cover usually much less than 50% but bryophytes comprise a significant part of this formation.

The bryophyte flora of Macquarie Island has been intensively studied in the last three decades of the twentieth century by the second author. These studies were crowned in a descriptive flora of mosses (Seppelt, 2004). In total, 84 species of moss have been recorded from the island but subsequent studies have yielded six additional species (Blockeel *et al*., 2007, 2008; Ellis *et al*., 2011; Bednarek-Ochyra & Ochyra, 2011; Bednarek-Ochyra *et al*., 2014). Thus, at present the island's moss flora totals 90 species.

In contrast, the hepatic flora of Macquarie Island is still poorly and inadequately known. Seppelt (1977) included 31 species in a checklist of the island's bryophytes. Only a few subsequent studies on the island's hepatics are available (Inoue & Seppelt, 1985; Grolle & Seppelt, 1986) and as a result some 45 species have been recorded from the island and a further five species remained unnamed. In addition, one species of hornwort, *Megaceros austronesophilus* Cargill *et* Seppelt, was described from material collected on Macquarie Island (Cargill *et al*., 2013) and this is the only record of a hornwort from the Subantarctic. In the present account 16 species of liverwort are reported for the first time from Macquarie Island. They were collected by the second author during his surveys of the bryophyte flora of the island in the late 1970s and in the first half of the 1980s. Apart from specimens in which hepatics predominated these plants were also extracted from some samples of mosses whose duplicates are available in KRAM.

Considering these records, the flora of Macquarie Island now consists of 62 species of liverworts and one species of hornwort. Thus, after South Georgia, it is the second richest flora of hepatics in the Subantarctic.

LIST OF TAXA

METZGERIACEAE H.Klinggr.

Metzgeria flavovirens Colenso

MACQUARIE ISLAND: (*1*) Bauer Bay, about 600 m north-east of Bauer Bay hut, lat. 54°33'09.0''S, long. 158°53'00.0''E, alt. 30 m a.s.l., on rocks in gully in tuft of *Bucklandiella crispula* (Hook.f. *et* Wilson) Bednarek-Ochyra *et* Ochyra, associated with *Lepidozia laevifolia* (Hook.f. *et* Taylor) Gottsche, Lindenb. *et* Nees, 8 Jan 1980, *Seppelt 9801A* (KRAM); (*2*) Sandell Bay, along watercourse on coastal slopes, lat. 54°40'39.0''S, long. 158°50'00.0''E, alt. 70 m a.s.l., amongst rock and rubble on steep coastal slope in mats of *Lembophyllum divulsum* (Hook.f. *et* Wilson) Paris, 4 Feb 1980, *Seppelt 9906* (ADT); (*3*) south-west side of Green Gorge, lat. 54°38'00.0''S, long. 158°53'00.0''E, alt. 110 m a.s.l., on peat amongst rocks at edge of gully, in tuft of *Syntrichia andersonii* (Ångstr.) R.H.Zander, associated with *Lepidozia laevifolia, Triandrophyllum subtrifidum* (Hook.f. *et* Taylor) Fulford *et* Hatcher, *Lophocolea lenta* (Hook.f. *et* Taylor) Gottsche, Lindenb. *et* Nees and a species of *Leptoscyphus* Mitt., 26 Feb 1980, *Seppelt 10442CC, 10442CC* (KRAM); (*4*) Green Gorge, 500 m south-west of Green Gorge hut, lat. 54°38.3'S, long. 158°54.4'E, alt. 65 m a.s.l., in crevices and on small ledges on cliff face, NW aspect, in mat of *Isopterygium limatum* (Hook.f. *et* Wilson) Broth., *Seppelt 14306A* (KRAM).

Metzgeria flavovirens has long been considered as a neglected and insufficiently known species (Hodgson, 1961; Kuwahara, 1987) and it was recorded from New Zealand under the name *M. disciformis* A.Evans (Kuwahara, 1966). It was first accepted by Hodgson (1972) and recently its status was thoroughly discussed by So (2002). Until now the species has been considered endemic to New Zealand, having most stations in the North Island and known from only single sites in the South Island and Snares Island and two localities on Stewart (Rakiura) Island (So, 2002). Herein, its geographical range is markedly extended to subantarctic Macquarie Island and this is the first discovery of *M. flavovirens* in this biome. The species seems to be fairly frequent at low elevations, to 110 m a.s.l., growing in patches of various species of moss. *Metzgeria flavovirens* is the only species in this region which shows some traces of the bluish tinge and this feature distinguishes it from *M. furcata* (L.) Dumort. which is also known from Macquarie Island (Selkirk *et al.*, 1990).

RADULACEAE Müll.Frib.

Radula aneurismalis (Hook.f. *et* Taylor) Gottsche, Lindenb. *et* Nees

MACQUARIE ISLAND: (*1*) on rockly knoll south of Scoble Lake, alt. 230 m a.s.l., lat. 54°31'S, long. 158°54'E, in tuft of *Bucklandiella crispula* associated with *Frullania rostrata*, 21 Nov 1975, *Seppelt 4205B* (KRAM); (*2*) summit of Mount Ifould, alt. 370 m a.s.l., lat. 54°37'S, long. 158°52'E, on rocks in tuft of *Bucklandiella crispula* associated with *Frullania rostrata*, 18 Nov 1979, *Seppelt 6898AA* (KRAM); (*3*) Douglas Point on the west coast, alt. 10 m a.s.l.,

lat. 54°33.5'S, long. 158°52.2'E, growing on rock stacks on raised beach terrace in tuft of *Bucklandiella crispula*, 6 Nov 1981, *Seppelt 11558A* (specimen determined by M. Renner) (KRAM, NSW).

While some authors (Schuster, 1980; McCarthy, 2003; Renner, 2005) use the spelling *Radula aneurysmalis* of the specific epithet which was introduced by Gottsche *et al*. (1844), we follow the spelling – *aneurismalis* – used in the original publication describing this species (Hooker & Taylor, 1845). This is one of the smallest species in the genus which externally resembles some small members of the Lejeuneaceae, such as *Drepanolejeunea* (Spruce) Schiffn. and *Harpalejeunea* (Spruce) Schiffn. However, it is immediately distinct from them by lacking underleaves; production of rhizoids on the ventral surface of the lobules, never on the stem; large oil bodies disposed singly in lobe cells; and flattened perianths. The most distinctive diagnostic character of this species is the very narrow, almost tubular, lobule carinal region that extends along the length of the keel. Also, the rectangular lobules with an obtuse apex are characteristic. *Radula aneurismalis* is an Australasian species known from Tasmania, from where it was described (Hooker & Taylor, 1845), and in Victoria and Queensland on mainland Australia (McCarthy, 2003). The species is widely distributed along the western coasts of the North and South Islands of New Zealand, extending southwards to Stewart (Rakiura) Island, growing epiphytically on the bark of *Leptospermum scoparium* J.R.Forst. *et* G.Forst. and species of *Kunzea* Rchb. in well lit situations (Renner, 2005). The discovery of *R. aneurismalis* on Macquarie Island represents a remarkable range extension of this species and it is the first discovery in the Subantarctic. It also grows epiphytically on shoots of *Bucklandiella crispula*, often accompanied by *Frullania rostrata* (Hook.f. *et* Taylor) Gottsche, Lindenb. *et* Nees.

SCHISTOCHILACEAE H.Buch

Schistochila altissima E.A.Hodgs.

MACQUARIE ISLAND: in gorge on west side of Lusitania Creek basin, lat. 54°43'03.0''S, long. 158°50'38.0''E, alt. 200 m a.s.l., on gritty soil at edge of creek gully, 11 Jan 1980, *Seppelt 9644* (determination confirmed by J.J. Engel) (ADT).

Schistochila altissima is a relatively rare amphipacific south-cool-temperate species (Fig. 1) which was described only a half century ago from New Zealand as a species in its own right (Hodgson, 1965). In South America it is known from the provinces of Aisén and Magallenes, with the majority of records in the Tierra del Fuego archipelago at the southernmost tip of the continent (Hässel de Menéndez, 1975; Schuster & Engel, 1977) and, additionally, it extends to subantarctic South Georgia (Hässel de Menéndez, 1977). The South American populations were recognised by Schuster and Engel (1975, 1982) as a separate subspecies, *S. altissima* subsp. *polystratosa* R.M.Schust. *et* J.J.Engel or *Pachyschistochila altissima* (E.A.Hodgs.) R.M.Schust. *et* J.J.Engel subsp. *polystratosa* (R.M.Schust. *et* J.J.Engel) R.M.Schust. *et* J.J.Engel, but this taxon is not universally recognised owing to its minor differences and mostly overlapping characters with the type subspecies (Hässel de Menéndez & Rubies, 2009). The second centre of occurrence of *S. altissima* is in New Zealand where it is widely distributed but scattered in the North and South Islands, extending southwards to the Auckland Islands (Schuster &

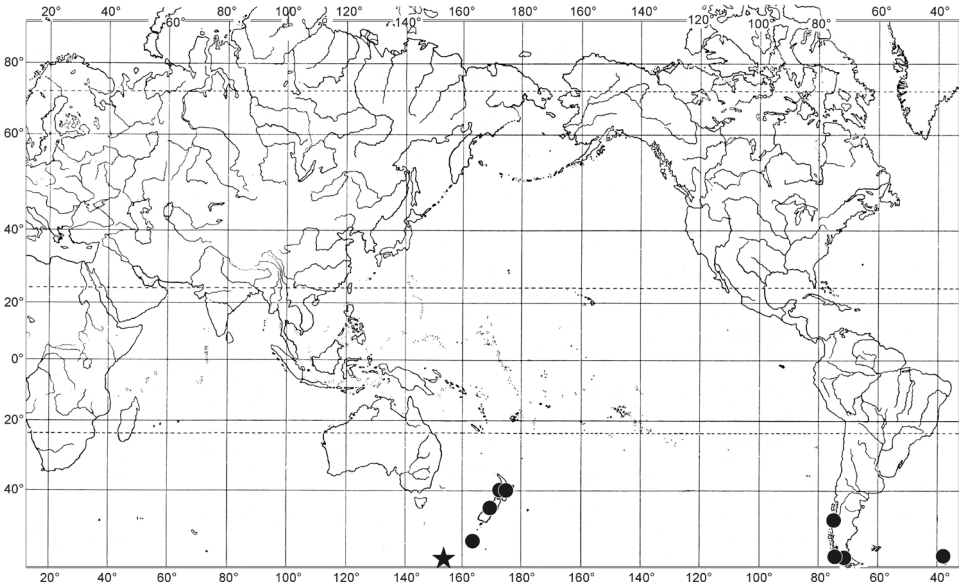

Fig. 1. Global distribution of *Schistochila altissima* E.A.Hodgs. New records from Macquarie Island marked with a star.

Engel, 1985). Herein, the geographical range of the species is extended to subantarctic Macquarie Island and this is apparently the southernmost locality of the species, situated a little bit more to the south than those on South Georgia in the South Atlantic Ocean.

PSEUDOLEPICOLEACEAE Fulford *et* J.Taylor

Temnoma quadripartitum (Hook.) Mitt.

MACQUARIE ISLAND: (*1*) between Bauer Bay and Mawson Point, lat. 54°33.5'S, long. 158°52'E, on raised beach terrace amongst species of *Colobanthus* Bartl. and *Marchantia berteroana* Lehm., 14 Dec 1979, *Seppelt 7298A* (ADT); (*2*) Whisky Creek SW of Waterfall Lake, lat. 54°44'54.0''S, long. 158°50'023.0''E, alt. 300 m a.s.l., in the herbfield ecotone in short grassland associated with *Lophocolea semiteres* in tuft of *Bartramia ithyphylla* Brid., 20 Feb 1980, *Seppelt 10129B* (KRAM); (*3*) north side of Handspike Corner, lat. 54°29'42.0''S, long. 158°53'42.0''E, alt. 15 m a.s.l., in tuft of *Aulacomnium palustre* (Hedw.) Schwägr. in boggy area in *Pleurophyllum hookeri* Buchanan herbfield on raised beach terrace, associated with *Clasmatocolea humilis* (Hook.f. *et* Taylor) Grolle, *Lophocolea bidentata* (L.) Dumort., *Megaceros austronesophilus* Cargill *et* Seppelt and a species *Leptoscyphus* Mitt., 1 Jan 1980, *Seppelt 7363E* (KRAM); (*4*) east end of Skua Lake, lat. 54°30.5'S, long. 158°50.7'E, alt. 180 m a.s.l., in wet bryophyte/*Hydrocotyle* flush, in tuft of *Campylopus clavatus* (R.Br.) Hook.f. *et* Wilson, associated with *Clasmatocolea humilis*, *Megaceros austronesophilus* and *Leptoscyphus* sp., 4 Jan 1982, *Seppelt 12343* (KRAM); (*5*) 700 m east of Mount Gwynn, lat. 54°41.2'S, long. 158°51'E, alt. 280 m a.s.l., on terraces in fellfield in tuft of *Gackstroemia weindorferi* (Herzog) Grolle, associated with *Lepidozia laevifolia* (Hook.f. *et* Taylor) Gottsche, Lindenb. *et* Nees, *Metzgeria leptoneura* Spruce, *Syzygiella sonderi* (Gottsche)

K.Feldberg, Váňa, Hentschel *et* J.Heinrichs, *Plagiochila restrospectans* Nees, *Triandrophyllum subtrifidum* (Hook.f. *et* Taylor) Fulford *et* Hatcher and *Acrobolbus ochrophyllus* (Hook.f. *et* Taylor) R.M.Schust., 13 Jan 1982, *Seppelt 12606A* (KRAM).

A panholantarctic temperate species (see Engel, 1990: p. 68 for a global distribution map), often extending to the Subantarctic in the Kerguelen Biogeographical Province, where it is frequent in the Prince Edward Islands, on Îles Crozet and Îles Kerguelen (Grolle, 2002; Váňa & Gremmen, 2006). It is widespread in temperate regions of southern South America, ranging from the Valdivian province at lat. *ca* 39°S to Tierra del Fuego and the Falkland Islands, but not to subantarctic South Georgia (Engel, 1978, 1990; Hässel de Menéndez & Rubies, 2009). *Temnoma quadripartitum* is absent from southern Africa and the adjacent islands in the South Atlantic Ocean (Tristan da Cunha and Gough Island) (Váňa & Engel, 2013), but it is known from Île Amsterdam in the South Indian Ocean (Váňa *et al*., 2014). The species recurs in Australasia where it is known only from New Zealand where the genus *Temnoma* Mitt. has its centre of diversity, where apart from *T. quadripartitum*, four species are endemic and one extends to SE Australia (Schuster, 1967). *Temnoma quadripartitum* is relatively frequent in the montane areas of New Zealand, ranging from the central part of the North Island through central and southern parts of the South Island to the Campbell Islands in the south-cool-temperate zone (Engel & Glenny, 2008). The species is very variable and it is represented in New Zealand by three varieties, one of which is endemic. The discovery of *T. quadripartitum* on Macquarie Island represents a remarkable extension of its range to the Subantarctic in the Australasian sector and these are one of the southernmost sites of the species.

HERBERTACEAE Fulford *et* Hatcher

Herbertus oldfieldianus (Steph.) Rodway

Macquarie Island: (*1*) about 1 km north of Mount Hamilton, lat. 54°42’12.0’’S, long. 158°49’36.0’’E, alt. 260 m a.s.l., in fellfield terrace, associated with *Frullania rostrata* and *Cheilolejeunea albovirens* (Hook.f. *et* Taylor) E.A.Hodgs., 11 Jan 1980, *Seppelt 7625 C* (ADT); (*2*) south of Mount Ainsworth, lat. 54°46’00.0’’S, long. 158°49’00.0’’E, alt. 300 m a.s.l., on rocky outcrop in fellfield, associated with *Lepidozia obtusiloba* Steph. and *Syzygiella sonderi*, 2 Feb 1980, *Seppelt 10132A* (ADT).

An Australasian temperate montane species, occurring in Tasmania and New Zealand but absent from mainland Australia (Fig. 2). The species is quite variable and it was described at the same time from Tasmania as *Schisma oldfieldiana* Steph. and from the North Island of New Zealand as *S. alpina* Steph. (Stephani, 1909-1912). The conspecificity of these species was suggested by Schuster (2000) and this taxonomic concept was effected by So (2003) who adopted the name *Herbertus oldfieldianus* and considered *H. alpinus* (Steph.) E.A.Hodgs. as its synonym. The species is relatively frequent in Tasmania, occurring at an elevation of 670-1200 m a.s.l., and widely distributed but scattered in New Zealand. In the North Island it occurs at higher elevations, 960-1330 m a.s.l. from the southern part of the island, north to the Coromandel Peninsula, whilst in the South Island it is common on the Main Divide and in the areas along the western coast, seldom extending to the east, and generally occurring at elevations from 440 to 1540 m a.s.l. Additionally, *H. oldfieldianus* is known from Stewart (Rakiura) Island and Engel and Glenny (2008) reported it from the Campbell Islands, whilst So (2003) cited the

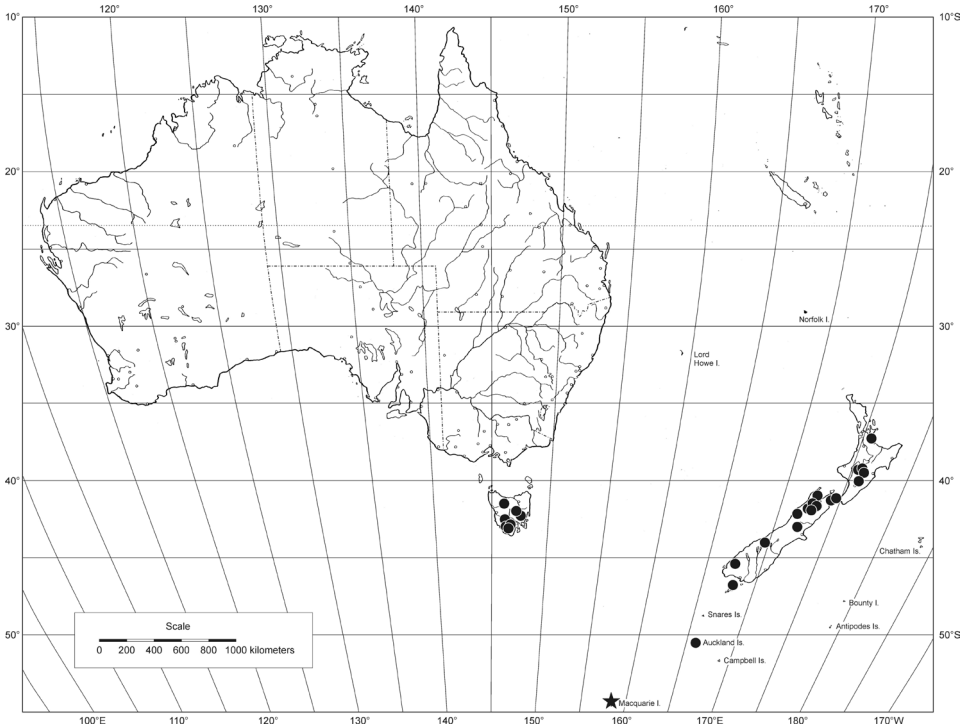

Fig. 2. Global distribution of *Herbertus oldfieldianus* (Steph.) Rodway. New records from Macquarie Island marked with a star.

specimen from the Auckland Islands, but did not mention its occurrence on the Campbell Islands. The occurrence of the species on subantarctic Macquarie Island is expected, since such a distribution pattern is exhibited by several species of hepatics, for example *Adelanthus falcatus* (Hook.) Mitt. and *A. occlusus* (Hook.f. *et* Taylor) Carrington, *Andrewsianthus perigonialis* (Hook.f. *et* Taylor) R.M.Schust. and *Lepicolea scolopendra* (Hook.) Trevis. (Engel & Glenny, 2008), and of mosses, for instance *Bucklandiella seppeltii* Bednarek-Ochyra, Ochyra, Sawicki *et* Szczecińska (Bednarek-Ochyra *et al*., 2014).

LEPODOZIACEAE Limpr.

Lepidozia obtusiloba Steph.

MACQUARIE ISLAND: (*1*) Sellick Bay, lat. 54°37’38.0’’S, long. 158°49’52.0’’E, alt. 120 m a.s.l., on steep coastal slopes, 1 Dec 1979, *Seppelt 7013* (checked by J.J. Engel); (*2*) south end of Lusitania Bay, 300 m north-east of Mount Aurora summit, lat. 54°43’33.0’’S, long. 158°51’12.0’’E, alt. 220 m a.s.l., on *Azorella* dominated fellfield slopes, associated with *Gackstroemia weindorferi, Lepidozia laevifolia, Plagiochila retrospectans* (Nees) Nees*, Syzygiella sonderi* and *Leptoscyphus* sp., 11 Jan 1980, *Seppelt 7726C* (ADT); (*3*) Lusitania Creek, about 500 m from the coast, lat. 54°43’02.5’’S, long. 158°50’40.0’’E, alt. 80 m a.s.l.,

in tuft of *Philonotis scabrifolia* (Hook.f. *et* Wilson) Braithw., associated with *Syzygiella sonderi*, *Megaceros austronesophilus* and *Leptoscyphus* sp., 11 Jan 1980, *Seppelt 7742A* (KRAM); (*4*) Windy Ridge, 1 km east of Waterfall Lake, lat. 54°44'30.0''S, long. 158°50'24.0''E, alt. 340 m a.s.l., in windswept fellfield, associated with *Acrobolbus ochrophyllus, Clasmatocolea strongylophylla* (Hook.f. *et* Taylor) Grolle*, Lepidozia laevifolia, Andrewsianthus marionensis, Lophocolea lenta*, *Riccardia* cf. *cochleata* (Hook.f. *et* Taylor) Kuntze and *Syzygiella sonderi*, 11 Jan 1980, *Seppelt 7954E* (ADT); (*5*) west side of Lusitania Creek basin, lat. 54°43'03.0''S, long. 158°50'38.0''E, alt. 100 m a.s.l., in open fellfield in gorge in mats of *Rhacocarpus purpurascens* (Brid.) Paris and in tufts of *Andreaea acutifolia* Hook.f. *et* Wilson, associated with *Andrewsianthus marionensis* and *Plagiochila circinalis* (Lehm.) Lehm. *et* Lindenb. 11 Jan 1980, S*eppelt 9629B* (KRAM); (*6*) south of Mount Ainsworth, lat. 54°46'00.0''S, long. 158°49'00.0''E, alt. 300 m a.s.l., on rocky outcrop in fellfield, associated with *Herbertus oldfieldianus* and *Syzygiella sonderi*, 2 Feb 1980, *Seppelt 10132B* (ADT); (*7*) same locality, in tuft of *Bucklandiella crispula*, associated with *Lepidozia laevifolia*, 2 Feb 1980, *Seppelt 10112B* (KRAM); (*8*) 500 m north of Mount Tulloch, lat. 54°34'32.0''S, long. 158°54'15.0''E, alt. 200 m a.s.l., in wet seepage area near small tarn in tuft of *Breutelia elongata* (Hook.f. *et* Wilson) Mitt., associated with *Leptoscyphus* sp., 27 Feb 1980, *Seppelt 10234A* (KRAM); (*9*) west side of Green Gorge basin, lat. 54°37'45.0''S, long. 158°53'10.0''E, alt. 120 m a.s.l., in short grassland/fellfield ecotone, in mat with *Gackstroemia weindorferi, Lepidolaena reticulata* (Hook.f. *et* Taylor) Trevis., *Syzygiella colorata* (Lehm.) K.Feldberg, Váňa, Hentschel *et* J.Heinrichs*, Triandrophyllum subtrifidum* and *Leptoscyphus* sp. 26 Feb 1980, *Seppelt 10366C* (ADT); (*10*) same locality, in fellfield terraces, associated with *Metzgeria leptoneura, Syzygiella sonderi* and *Triandrophyllum subtrifidum*, 26 Feb 1980, *Seppelt 10381A* (ADT); (*11*) 500 m south-west of North Mountain, lat. 54°31'S, long. 158°55'E, alt. 200 m a.s.l., by small tarn in wet grassland on plateau, in tuft of *Breutelia elongata*, associated with *Clasmatocolea humilis*, *Lepidolaena reticulata*, *Lepidozia laevifolia* and *Metzgeria* cf. *furcata*, 6 Dec 1981, *Seppelt 12137D* (KRAM); (*12*) south-west of Perserverance Bluff, at north end of wet herbfield on plateau, near ski hut site, lat. 54°30.5'S, long. 158°55.3'E, alt. 200 m a.s.l., in patch of *Breutelia elongata*, associated with *Adelanthus occlusus, Lepidozia laevifolia* and *Leptoscyphus* sp., 17 Dec 1984, *Seppelt 14941 C* (KRAM); (*13*) plateau 400 m south of Island Lake, lat. 54°32'06.0''S, long. 158°53'20.0''E, alt. 200 m a.s.l., in bryophyte dominated herbfield, associated with *Adelanthus occlusus*, *Plagiochila retrospectans*, *Riccardia* cf. *aequicellularis* (Steph.) Hewson, *Syzygiella colorata* and *S. sonderi*, 3 Mar 1985, *Seppelt 15613B* (KRAM).

An Australasian temperate species, with its maximum occurrence in New Zealand at an elevation of 600-1200 m a.s.l. and only occasionally penetrating to Victoria in SE Australia (Engel & Glenny, 2008). In New Zealand, *Lepidozia obtusiloba* is known only from the South Island where it occurs commonly in areas east of the Main Divide, although it is also quite frequent in central and south Westland and Fiordland. Additionally, the species is known from the Auckland and Campbell Islands and herein its range is extended to subantarctic Macquarie Island where it appears to be a frequent constituent of the hepatic flora, at least judging from the number of specimens collected. The report of *Lepidozia* sp. from Macquarie Island (Seppelt, 1977) most probably refers to this species.

LOPHOCOLEACEAE Vanden Berghen

Cryptolophocolea mitteniana (Colenso) L.Söderstr. var. ***obtusa*** (J.J.Engel) L.Söderstr.

Macquarie Island: (*1*) north end of the plateau, 100 m north-west of Ski Hut site, lat. 54°30.5'S, long. 158°55.3'E, alt. 220 m a.s.l., in drainage channel in plateau herbfield,

associate with *Leptoscyphus* sp., 13 Nov 1979, *Seppelt 6393A* (KRAM); (*2*) Sawyer Creek Valley, 1.8 km north-east of Pyramid Peak, lat. 54°38'45.0''S, long. 158°53'12.0''E, alt. 180 m a.s.l., on rocky outcrop in fellfield/short grassland ecotone, associated with *Lophocolea bidentata* and *Leptoscyphus* sp., 17 Nov 1979, *Seppelt 6708A* (ADT) (checked by J.J. Engel); (*3*) Boiler Rocks, lat. 54°33'S, long. 158°52.3'E, alt. 15 m a.s.l., in herbfield on raised beach terrace, associated with *Lophocolea bidentata*, *Metzgeria leptoneura*, *Temnoma palmatum* (Pearson) R.M.Schust., *Megaceros austronesophilus*, *Riccardia* cf. *cochleata* and *Leptoscyphus* sp., 13 Dec 1979, *Seppelt 7261A* (ADT) and 29 Oct 1983, *Seppelt 14357A* (KRAM); (*4*) south end of Red River Valley, boggy flats near track crossing of Red River, lat. 54°36'18.0''S, long. 158°54'00.0''E, alt. 95 m a.s.l., in boggy bryophyte dominated mire, in tuft of *Aulacomnium palustre*, associated with *Lepidozia laevifolia* and *Leptoscyphus* sp., 27 Feb 1980, *Seppelt 10251C* (KRAM); (*5*) about 1.2 km north-east of Mount Hamilton, lat. 54°42'16.0''S, long. 158°50'30.0''E, alt. 180 m a.s.l., in open fellfield on north facing slope, 11 Jan 1980, *Seppelt 7729* (ADT).

Cryptolophocolea mitteniana is a New Zealand endemic exhibiting a remarkable variability which gave rise to recognition of three varieties within it (Engel, 2010 as *Chiloscyphus mittenianus* (Colenso) J.J.Engel). Of these, the type variety is widespread and locally common throughout this insular country, whereas the two other varieties are restricted to the southern regions of the South Island. Of these, *C. mitteniana* var. *obtusa* is a quite distinct taxon in having normally narrowly rounded leaf apices (vs. acute to acuminate), usually connate leaves on the dorsal side (vs. uniformly free dorsally) and underleaves occasionally free on one side (vs. uniformly broadly connate on both sides). This variety occurs only in the southern part of the South Island (Otago and Southland) and on the Auckland and Campbell Islands in the south-cool-temperate zone and which are often included as subantarctic islands. The discovery of this variety on Macquarie Island extends the range of the species to the Subantarctic in the strict sense.

Lophocolea novaezeelandiae (Lehm. *et* Lindenb.) Nees var. ***grandistipula*** (Schiffn.) Váňa, *comb. nov*.

Basionym: *Lophocolea grandistipula* Schiffn. *in* Engl., Forschungsr. Gazelle 4: 12, *pl. 3, f. 29-32*. 1890.

MACQUARIE ISLAND: west side of Green Gorge basin, lat. 54°37'45.0''S, long. 158°53'10.0''E, alt. 120 m a.s.l., in fellfield terraces, forming extensive monospecific patches, 26 Feb 1980, *Seppelt 10385* (determination verified by J.J. Engel) (ADT).

Lophocolea (Dumort.) Dumort. has been merged with *Chiloscyphus* Corda (Engel & Schuster, 1985), but the arguments of Grolle (1995) to maintain these genera as separate taxa have recently been accepted in this account. Moreover, *Chiloscyphus* subg. *Connati* (Lindenb.) J.J.Engel, *nom. inval*., was elevated to generic rank to which the name *Cryptolophocolea* L.Söderstr., Crand.-Stotl., Stotler *et* Váňa is accepted (see Söderström *et al*., 2013a,b). Accordingly, the transfer of *Ch. novaezeelandiae* (Lehm. *et* Lindenb.) J.J.Engel *et* R.M.Schust. var. *grandistipulus* (Schiffn.) J.J.Engel to *Lophocolea* is effected herein. This variety of the otherwise markedly polymorphous *L. novaezeelandiae* is a distinct taxon, characterised by having all (or nearly all) leaves bilobed and smaller median leaf cells. As is the case with the type variety and *L. novaezeelandiae* var. *meridionalis* (Steph.) Váňa, *comb. nov.* (≡ *Lophocolea meridionalis* Steph., Bull. Herb. Boissier 6(10): 888. 1910 (basionym) ≡ *Chiloscyphus novaezeelandiae* (Lehm. *et* Lindenb.) J.J.Engel *et* R.M.Schust. var. *meridionalis* (Steph.) J.J.Engel, Contr. Univ. Michigan Herb. 18: 109. 1992) is an Australasian endemic having the main centre of its occurrence in the North and South Islands of New Zealand and extending to Stewart (Rakiura) Island in the south. Additionally, this variety occurs sporadically in Tasmania and in

SE Australia (Victoria and New South Wales) (Engel, 2010). The present discovery of *L. novaezeelandiae* var. *grandistipula* on Macquarie Island is a remarkable range extension of this variety to the Subantarctic, but it appears to be very rare on this island.

Lophocolea semiteres (Lehm.) Mitt.

MACQUARIE ISLAND: (*1*) about 400 m north-east of Island Lake, lat. 54°31'24.0''S, long. 158°53'38.0''E, alt. 210 m a.s.l., in plateau fellfield, associated with *Adelanthus occlusus*, *Gackstroemia weindorferi*, *Lepidozia laevifolia*, *Lophocolea lenta*, *Metzgeria leptoneura* and *Syzygiella colorata*, 13 Nov 1979, *Seppelt 6565E* (ADT); (*2*) Whisky Creek SW of Waterfall Lake, lat. 54°44'54.0''S, long. 158°50'02.0''E, alt. 300 m a.s.l., in the herbfield ecotone in short grassland associated with *Lophocolea semiteres* in tuft of *Bartramia ithyphylla* Brid., 20 Feb 1980, *Seppelt 10129A* (KRAM); (*3*) Sandy Nay, Finch Creek, lat. 54°33'49.0''S, long. 158°54'42.0''E, alt. 30 m a.s.l., from old *Poa foliosa* pedestal, in *Agrostis magellanica* herbfield/short grassland on the north side of valley, in tuft of *Syntrichia rubra* (Mitt.) R.H.Zander, associated with *Lophocolea lenta* and *Metzgeria* cf. *furcata*, 22 Feb 1980, *Seppelt 10257B* (KRAM); (*4*) between Bauer Bay and Boiler Rocks on the west coast of the island, lat. 54°33.2'S, long. 158°52.5'E, alt. 10 m a.s.l., at edge of old elephant seal wallow area on upper raised beach terrace, approximately 200 m from sea, in *Agrostis-Luzula-Stilbocarpa-Poa foliosa* association, in tuft of *Tayloria octoblepharis* (Hook.) Mitt., associated with *Lophocolea bidentata*, 11 Dec 1981, *Seppelt 12160B* (KRAM).

A panholantarctic species widely distributed throughout the temperate region of the Holantarctic. It occurs in South Africa (Grolle, 1959; Wigginton & Grolle, 1996) from where it was originally described (Lehmann, 1829), Tristan da Cunha (Váňa & Engel, 2013) and in southern South America, including the Falkland Islands and Islas Juan Fernández (Engel, 1990). *Lophocolea semiteres* is widespread in Australasia, including New Zealand and adjacent islands (Stewart Island, Antipodes Islands, Chatham Island) (Engel, 2010), southern Australia (Western Australia, Victoria, New South Wales, Australian Capital Territory, Queensland), Tasmania, Lord Howe Island and Vanuatu (McCarthy, 2003). Until recently, the species was unknown from the Subantarctic but it was discovered on Marion Island in the Prince Edward Island archipelago (Váňa & Gremmen *in* Ellis *et al.*, 2014a). It is very likely that *L. semiteres* was introduced here from South Africa because on Marion Island a South African research station is located and is constantly inhabited by research and technical staff. This assumption is highly probable because the species has remarkable invasive abilities. In 1955 it was found for the first time in Europe in the oceanic Isles of Scilly in Britain (Paton, 1965) and subsequently it spread to Belgium, the Netherlands (Stieperaere, 1994) and western Germany (Meinunger & Schröder (2007) in mainland Europe, where it has become an aggresive coloniser in certain plant communities and eliminates native species of *Lophocolea* in pine forests (Stieperaere *et al.*, 1997). Additional localities were subsequently found also in the British Isles and Ireland (Paton, 1999; Blackstock & Rothero, 2003) and since 2000 there has been a considerable spread of *L. semiteres* in Britain, where presently it is a very frequent species in England and southern Scotland (Bosanquet, 2014). In contrast to Marion Island, the southernmost localities of *L. semiteres* on Macquarie Island seem to be natural and they represent an extension of its continuous range covering the South Island of New Zealand, Stewart (Rakiura) Island and the Campbell Islands.

ADELANTHACEAE Grolle

Syzygiella teres (Carrington *et* Pearson) Váňa

MACQUARIE ISLAND: (1) 500 m south-west of Pyramid Peak, lat. 54°39'36.0''S, long. 158°52'00.0''E, alt. 190 m a.s.l., in fellfield in cushions of *Andreaea acutifolia*, 4 Feb 1980, *Seppelt 9944B* (KRAM)); (2) on rocky knoll on SE side of Mount Haswell, lat. 54°30'S, long. 158°57'E, alt. 240 m a.s.l., in crevice depression on rock surface, 23 Oct 1983, *Seppelt 14281* (specimen determined by R. Grolle) (JE).

A pansubantarctic disjunct species (for global distribution maps see Engel, 1990: p. 105 and Bednarek-Ochyra *et al*., 2000: p. 141). It is widely distributed but scattered in all sectors of the Subantarctic, including South Georgia (Hässel de Menéndez, 1977; Bednarek-Ochyra *et al*., 2000) in the South American sector, Marion Island in the Prince Edward Islands (Grolle, 2002) in the African sector and it is now recorded from Macquarie Island in the Australian sector. Moreover, *Syzygiella teres* penetrates widely into the Antarctic where it is known from the highly isolated Bouvetøya in the South Atlantic, as well as the South Sandwich Islands, the South Orkney Islands and the South Shetland Islands, extending as far south as the Graham Coast in the central part of the Western Antarctic Peninsula. Outside the austral polar regions, the species occurs in Tierra del Fuego (Hässel de Menéndez & Rubies, 2009), the Falkland Islands (Engel, 1990), Tristan da Cunha and Gough Island (Váňa & Engel, 2013), as well as in Tasmania and SE Australia (Victoria) (McCarthy, 2003) and New Zealand (North Island, South Island, Stewart (Rakiura) Island and the Campbell Islands) (Schuster, 1996a; Engel & Glenny, 2008). All these locations are situated at high alpine elevations where the climatic conditions are similar to those on subantarctic and antarctic islands. The earlier report of *Herzogobryum* sp. from Macquarie Island (Selkirk *et al*., 1990) apparently refers to this species.

CEPHALOZIELLACEAE Douin

Cephaloziella varians (Gottsche) Steph.

MACQUARIE ISLAND: (*1*) Bauer Bay: track leading to Sandy Bay from Bauer Bay Hut, lat. 54°33'25.0''S, long. 158°52'38.0''E, alt. 60 m a.s.l., in tuft of *Campylopus introflexus* (Hedw.) Brid. on peat in short grassland, 1 Mar 1985, *Seppelt 15631A* (KRAM); (*2*) Bauer Bay, NE side of Boiler Rocks, lat. 54°32'56.0''S, long. 158°52'25.0''E, alt. 15 m a.s.l., on old *Poa foliosa* tussock stool on upper raised beach terrace, at base of coastal slope, associated with *Lophocolea lenta* (Hook.f. *et* Taylor) Gottsche, Lindenb. *et* Nees, 12 Nov 1979, *Seppelt 6582* (ADT); (*3*) Bauer Bay, Gentoo Flat, Stoney Creek gully, lat. 54°33'30.0''S, long. 158°52'33.0''E, alt. 20 m a.s.l., on earth at edge of water in creek gully, associated with *Lophocolea lenta*, 8 Jan 1980, *Seppelt 9786* (ADT); (*4*) W side of Green Gorge, lat. 54°48'42.0''S, long. 158°53'00.0''E, alt. 100 m a.s.l., in tuft of *Notoligotrichum australe* (Hook.f. *et* Wilson) G.L.Sm. on bank on hill slopes, 26 Feb 1980, *Seppelt 10274A* (KRAM); (*5*) SW side of Green Gorge basin, lat. 54°37.9'S, long. 158°53.2'E, alt. 80 m a.s.l., in tuft of *Leptostomum inclinans* growing over rock in *Luzula-Agrostis* grassland, at south easterly aspecy, 4 Jan 1982, *Seppelt 12394A* (KRAM); (*6*) Caroline Cove, western end, 22 Oct 1983, *Seppelt 14287* (JE as *C.* cf. *exiliflora*); (*7*) Lusitania Creek, 11 Jan 1980, *Seppelt 7960* (JE as *C.* cf. *exiliflora*); Bauer Bay, NE of hut, 8 Jan 1980, *Seppelt 9798* (JE as *C.* cf. *exiliflora*).

A bipolar species which is panarctic-alpine in the Northern Hemisphere. Here it was known for a long time as *Cephaloziella arctica* Bryhn & Douin (the identity of *C. arctica* with *C. varians* was confirmed by Ochyra & Váňa, 1989). The discovery of *Cephaloziella varians* on Macquarie Island completes its continuous range in the Subantarctic. The material reported from this island as *C. exiliflora*

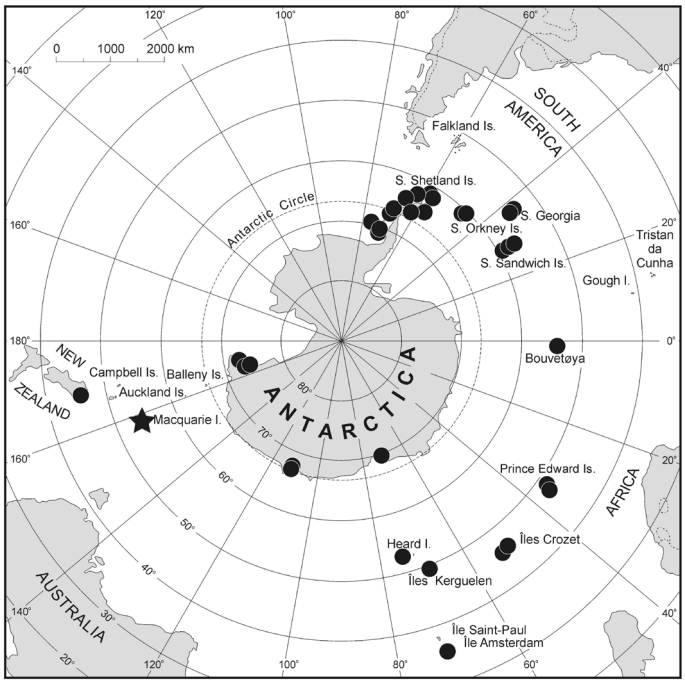

Fig. 3. Distribution map for *Cephaloziella varians* (Gottsche) Steph. in the Southern Hemisphere. New records from Macquarie Island marked with a star (after Bednarek-Ochyra *et al*., 2000, expanded).

(Taylor) Douin (Selkirk *et al*., 1990) was examined and it represents *C. varians*. Hitherto, except for Macquarie Island, this species was known from all subantarctic islands including South Georgia from whence it was described (Gottsche, 1890), the Prince Edward Islands (Váňa *et al*. in Blockeel *et al*., 2010), Îles Crozet (Grolle, 2002), Îles Kerguelen (Váňa & Gremmen, 2006) and Heard Island (Váňa & Gremmen, 2005). This species is also common in the maritime Antarctic and on the isolated Bouvetøya in the Southern Ocean (Lewis Smith in Ochyra & Váňa (1989), and it is the only species of hepatic known from the Continental Antarctic where it reaches its southernmost station at 77°S in Victoria Land (Bednarek-Ochyra *et al*., 2000). In the south-temperate zone, *C. varians* is very rare in Tierra del Fuego and in the Falkland Islands (Hässel de Menéndez & Rubies, 2009), in Tristan da Cunha (Váňa & Engel, 2013), New Zealand (Schuster, 1996b), and on Île Amsterdam (Váňa *et al*., 2014) (Fig. 3).

Herzogobryum atrocapillum (Hook.f. *et* Taylor) Grolle

Macquarie Island: (*1*) 800 m south of Mount Ainsworth, lat. 54°46.3'S, long. 158°49'E, alt. 280 m a.s.l., on shallow sandy soil on rock in windswept plateau herbfield, 3 Nov 1979, *Seppelt 6290* (ADT); (*2*) south side of Pyramid Peak, lat. 54°39'20.0''S, long. 158°52'35.0''E, alt. 170 m a.s.l., on rock in fellfield, in cushion of *Andreaea acutifolia*, associated with *Andrewsianthus perigonialis* and *Cheilolejeunea albovirens*, 17 Nov 1979, *Seppelt 6703C* (ADT); (*3*) shore of Surrey Lake, lat. 54°35'06.0''S, long. 158°54'18.0''E, alt. 160 m a.s.l., in wet short grassland at edge of lake, associated with *Clasmatocolea humilis, Hepatostolonophora rotata* (Hook.f. *et* Taylor) J.J.Engel and *Andrewsianthus marionensis*, 9 Nov 1979, *Seppelt 6383D* (ADT); (*4*) summit of Mount Hamilton, lat. 54°42'40.0''S,

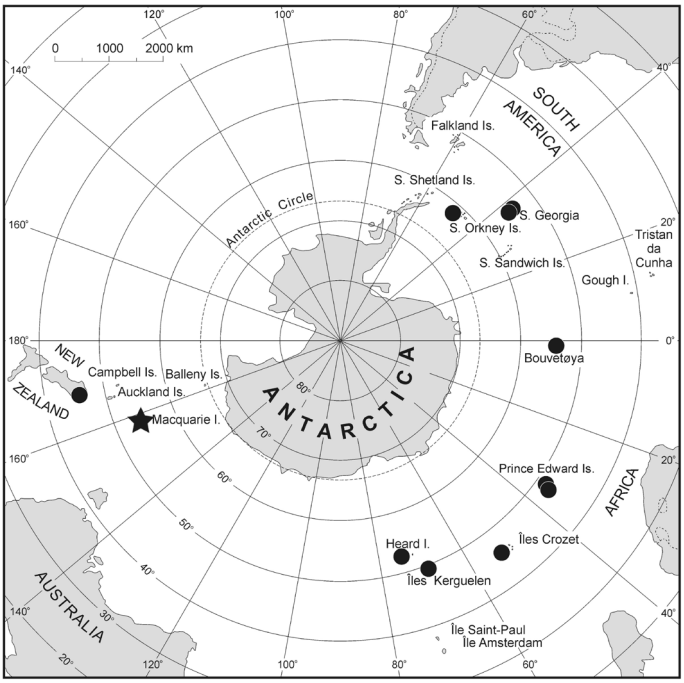

Fig. 4. Global distribution of *Herzogobryum atrocapillum* (Hook.f. *et* Taylor) Grolle. New records from Macquarie Island marked with a star (after Bednarek-Ochyra *et al*., 2000, expanded).

long. 158°49’39.0’’E, alt. 410 m a.s.l., windswept fellfield on summit, amongst rocks, associated with *Frullania rostrata*, *Syzygiella sonderi*, *Cheilolejeunea albovirens* and *Riccardia* cf. *cochleata*, 11 Jan 1980, *Seppelt 9649, 9657B*, *9658A*, *9666B & 9667B* (ADT); (*5*) west side of Green Gorge basin, lat. 54°37’45.0’’S, long. 158°53’10.0’’E, alt. 120 m a.s.l., in fellfield/short grassland ecotone, associated with *Cheilolejeunea albovirens* and *Syzygiella sonderi*, 26 Jan 1980, *Seppelt 10368B* (ADT); (*6*) north plateau, 1 km west of Bauer Bay-Overland Track junction, lat. 54°30’36.0’’S, long. 158°54’30.0’’E, alt. 225 m a.s.l., in fellfield/herbfield ecotone, in polsters of *Ditrichum strictum* (Hook.f. *et* Wilson*)* Hampe, associated with *Riccardia* cf. *aequicellularis* and *Syzygiella sonderi*, 28 Mar 1992, *Seppelt 27737A* (KRAM).

A pansubantarctic species (Fig. 4). The present discovery of *Herzogobryum atrocapillum* on Macquarie Island, where it is relatively frequent in fellfields and herbfields at high elevations, completes its geographical range in the Subantarctic. At present this species is known from all islands in this biome, including South Georgia (Hässel de Menéndez, 1980 as *Marsupella austrogeorgica* Hässel; Váňa, 1999), the Prince Edward Islands (Grolle, 1971, 2002), Îles Crozet (Grolle, 2002), Îles Kerguelen (Váňa & Gremmen, 2006), and Heard Island (Váňa & Gremmen, 2005). Moreover, *H. atrocapillum* extends into the maritime Antarctic, where it occasionally occurs on Signy Island in the South Orkney Islands archipelago, and to the orphaned Bouvetøya in the South Atlantic Ocean (Bednarek-Ochyra *et al*., 2000). Outside the austral polar region the species was only once recorded in the Southern Alps on the South Island of New Zealand (Schuster, 1996a; Engel & Glenny, 2008), but the record from Tasmania is dubious (Schuster, 1996a).

LOPHOZIACEAE Cavers

Andrewsianthus marionensis (S.W.Arnell) Grolle

Macquarie Island: (*1*) shore of Surrey Lake, lat. 54°35'06.0''S, long. 158°54'18.0''E, alt. 160 m a.s.l., in wet short grassland at edge of lake, associated with *Clasmatocolea humilis, Hepatostolonophora rotata* and *Herzogobryum atrocapillum* (Hook.f. *et* Taylor) Grolle, 9 Nov 1979, *Seppelt 6383A* (ADT); (*2*) 500 m north of Pyramid Peak, lat. 54°39'24.0''S, long. 158°52'34.0''E, alt. 160 m a.s.l., on rocky knoll in fellfield, associated with *Frullania rostrata, Syzygiella sonderi* and *Triandrophyllum subtrifidum*, 17 Nov 1979, *Seppelt 6694A* (ADT); (*3*) Windy Ridge, 1 km east of Waterfall Lake, lat. 54°44'30.0''S, long. 158°50'024.0''E, alt. 340 m a.s.l., in windswept fellfield, associated with *Acrobolbus ochrophyllus, Clasmatocolea strongylophylla* (Hook.f. *et* Taylor) Grolle*, Lepidozia laevifolia, L. obtusiloba, Lophocolea lenta*, *Riccardia* cf. *cochleata* (Hook.f. *et* Taylor) Kuntze and *Syzygiella sonderi*, 11 Jan 1980, *Seppelt 7954B* (ADT); (*4*) west side of Lusitania Creek basin, lat. 54°43'03.0''S, long. 158°50'38.0''E, alt. 100 m a.s.l., in open fellfield in gorge in mats of *Rhacocarpus purpurascens* (Brid.) Paris and in tufts of *Andreaea acutifolia*, associated with *Lepidozia obtusiloba* and *Plagiochila circinalis* (Lehm.) Lehm. *et* Lindenb. 11 Jan 1980, S*eppelt 9629A* (KRAM); (5) south-east of Mount Ainsworth, lat. 54°46'06.0''S, long. 158°49'18.0''E, alt. 260 m a.s.l., growing amongst *Macromitrium longirostre* (Hook.) Schwägr. in fellfield terraces, associated with *Acrobolbus ochrophyllus, Metzgeria leptoneura* and *Syzygiella sonderi*, 2 Feb 1980, *Seppelt 10100B* (ADT); (*6*) east side of Prion Lake, lat. 54°35'36.0''S, long. 158°53'45.0''E, alt. 165 m a.s.l., on rocky slopes near edge of lake, associated with *Cheilolejeunea albovirens*, *Plagiochila retrospectans, Clasmatocolea strongylophylla*, *Syzygiella sonderi, Triandrophyllum subtrifidum* and *Megaceros austronesophilus*, 9 Feb 1980, *Seppelt 10215A & 10223A* (ADT); (*7*) west side of Green Gorge, lat. 54°37,8'S, long. 158°53.3'E, alt. 120 m a.s.l., on rock in fellfield in tufts of *Macromitrium longirostre*, associated with *Frullania rostrata* and *Riccardia* cf. *alcicornis* (Hook.f. *et* Taylor) Trevis., 26 Feb 1980, *Seppelt 10360A* (KRAM); (*8*) same locality, alt. 50 m a.s.l., on bare gravel patch in grassland, in tuft of *Notoligotrichum australe*, associated with *Adelanthus occlusus, Lepidozia laevifolia*, *Plagiochila retrospectans* and *Syzygiella sonderi*, 1 Mar 1985, *Seppelt 15672B* (KRAM); (*9*) 3 km north-west of Sandy Bay, lat. 54°30'S, long. 158°57'E, alt. 250 m a.s.l., at base of fellfield terrace rise, in mat of *Rhacocarpus purpurascens*, associated with *Acrobolbus ochrophyllus*, *Adelanthus occlusus* (Hook.f. *et* Taylor) Carrington*, Clasmatocolea humilis, Lepidolaena reticulata*, *Lophocolea lenta, Syzygiella sonderi* and *Triandrophyllum subtrifidum*, 17 Dec 1984, *Seppelt 14883C* (KRAM).

For a long time *Andrewsianthus marionensis* was considered a subantarctic species, near-endemic to the Kerguelen Biogeographical Province where it is known from the Prince Edward Islands, Îles Crozet (Grolle, 2002) and Îles Kerguelen (Blockeel *et al*., 2009), and only slightly penetrating into the south-temperate zone in Tristan da Cunha (Váňa & Engel, 2013) and on Île Amsterdam (Váňa *et al*., 2014). As a result of subsequent taxonomic studies on the genus *Andrewsianthus* R.M.Schust., two species, *A. australis* J.J.Engel from southern South America and *A. cuspidatus* R.M.Schust. from Australasia, were considered to be inseparable from *A. marionensis* (Váňa *et al*., 2013). This resulted in the remarkable range extension of this species to southern South America including the Falkland Islands (Hässel de Menéndez & Rubies, 2009) and to SE Australia, Tasmania and New Zealand (McCarthy, 2003; Engel & Glenny, 2008). Moreover, the species was recently reported from subantarctic South Georgia (Ellis *et al*., 2014b) and herein its geographical distribution is extended to include Macquarie Island. Based on its current known distribution, *A. marionensis* must be considered as a panholantarctic temperate species which often penetrates into the Subantarctic (for a global distribution map see Váňa *et al*., 2014: p. 358).

BALANTIOPSIDACEAE H.Buch

Isotachis montana Colenso

MACQUARIE ISLAND: (*1*) south-west side of Square Lake, lat. 54°34'12.0''S, long. 158°53'42.0''E, alt. 135 m a.s.l., boggy seepage area near outflow of lake, associated with *Clasmatocolea humilis* and *Riccardia* cf. *cochleata*, 15 Dec 1979, *Seppelt 7207B* (ADT); (*2*) east side of peak on north side of Square lake, lat. 54°33'54.0''S, long. 158°54'00.0''E, alt. 200 m a.s.l., associated with *Syzygiella sonderi*, 17 Dec 1984, *Seppelt 14880A* (determined by J.J. Engel) (ADT).

An Australasian species, widespread and locally common throughout the North Island and South Island of New Zealand, where occurs in exposed sites over a broad altitudinal range from sea level to *ca* 1375 m a.s.l. (Hodgson, 1949, 1967 ; Schuster & Engel, 1997). In Australia *Isotachis montana* is rare and so far it has been recorded from Tasmania and Victoria (McCarthy, 2003). The present discovery of *I. montana* on Macquarie Island is a major range extension to the Subantarctic and the only record of the genus *Isotachis* from this biome. Most probably the earlier report of *Isotachis* sp. from Macquarie Island (Seppelt, 1977) refers to this species.

ACROBOLBACEAE E.A.Hodgs.

Acrobolbus cinerascens (Lehm.) Schiffn.

MACQUARIE ISLAND: west side of Green Gorge basin, lat. 54°38'00.0''S, long. 158°53'02.0''E, alt. 100 m a.s.l., in seepage area on north-east facing short grassland slope, associated with *Metzgeria leptoneura*, 26 Feb 1980, *Seppelt 10392A* (ADT).

Acrobolbus cinerascens is closely related to *A. ochrophyllus* and the two species belong within a separate subgenus, *Acrobolbus* Nees subg. *Marsupellopsis* (Berggr.) Schiffn. (Schuster, 2001). The species is easily recognised by its oblique leaves which are unequally bilobed, with a smaller dorsal lobe and with both lobes narrow and acute. It is an infrequent Australasian montane species, occurring in Victoria, New South Wales and the Australian Capital Territory in SE Australia, as well as in Tasmania, its *locus classicus* (McCarthy, 2003). In New Zealand it is rare and scattered in alpine sites in the South Island (Hodgson, 1946). Herein, the geographical range of *A. cinerascens* is markedly expanded to subantarctic Macquarie Island, where the species is so far known from only one collection.

A. ochrophyllus (Hook.f. *et* Taylor) R.M.Schust.

MACQUARIE ISLAND: (*1*) Windy Ridge, 1 km east of Waterfall Lake, lat. 54°44'30.0''S, long. 158°50'24.0''E, alt. 340 m a.s.l., in windswept fellfield, associated with, *Clasmatocolea strongylophylla* (Hook.f. *et* Taylor) Grolle, *Lepidozia laevifolia, L. obtusiloba*, *Andrewsianthus marionensis, Lophocolea lenta*, *Riccardia* cf. *cochleata* (Hook.f. *et* Taylor) Kuntze and *Syzygiella sonderi*, 11 Jan 1980, *Seppelt 7954A* (ADT); (*2*) south-east of Mount Ainsworth, lat. 54°46'06.0''S, long. 158°49'18.0''E, alt. 260 m a.s.l., growing amongst *Macromitrium longirostre* (Hook.) Schwägr. in fellfield terraces, associated with *Andrewsianthus marionensis, Metzgeria leptoneura* and *Syzygiella sonderi*, 2 Feb 1980, *Seppelt 10100A* (ADT); (*3*) Boot Hill, lat. 54°31'08.0''S, long. 158°55'00.0''E, alt. 280 m a.s.l., rocky outcrop in windswept fellfield, associated with *Adelanthus occlusus*, *Gackstroemia weindorferi*, *Lepidozia laevifolia*, *Plagiochila retrospectans* and *Syzygiella colorata*, 2 Mar 1980, *Seppelt 10565A* (ADT);

(*4*) 700 m east of Mount Gwynn, lat. 54°41.1'S, long. 158°51.3'E, alt. 280 m a.s.l., on terraces in fellfield in tuft of *Gackstroemia weindorferi*, associated with *Lepidozia laevifolia*, *Metzgeria leptoneura*, *Syzygiella sonderi*, *Plagiochila restrospectans*, *Triandrophyllum subtrifidum* and *Temnoma quadripartitum*, 13 Jan 1982, *Seppelt 12606G & 12606H* (KRAM); (*5*) 3 km north-west of Sandy Bay, lat. 54°32.3'S, long. 158°54.3'E, alt. 250 m a.s.l., at base of fellfield terrace rise, in mat of *Rhacocarpus purpurascens*, associated with *Andrewsianthus marionensis*, *Adelanthus occlusus, Clasmatocolea humilis, Lepidolaena reticulata*, *Lophocolea lenta, Syzygiella sonderi* and *Triandrophyllum subtrifidum*, 17 Dec 1984, *Seppelt 14883A* (KRAM); (*6*) 500 m north of Boot Hill, lat. 54°30'55.0''S, long. 158°55'02.0''E, alt. 260 m a.s.l., seepage area in plateau herbfield, associated with *Adelanthus occlusus*, *Temnoma palmatum* and *Leptoscyphus* sp., 17 Dec 1984, *Seppelt 14936A* (KRAM).

Acrobolbus ochrophyllus is a pan-south-temperate species which has a wide range throughout the temperate regions of the Southern Hemisphere and extends southwards to the Subantarctic (for the global distribution map see Engel, 1990: p. 150). The main centre of its occurrence seems to be in South America, where it is known from the Falkland Islands (Engel 1990), the Fuegian region and western Patagonia, with an isolated station on Isla Alejandro Selkirk (Más Afuera) in the Islas Juan Fernández archipelago (Engel, 1978; Hässel de Menéndez & Rubies, 2009). It is also known from occasional records from Tristan da Cunha (Váňa & Engel, 2013), the Cape region of South Africa (Arnell, 1963), Tasmania (Scott & Bradshaw, 1986), the South Island of New Zealand, as well as the Campbell and Auckland Islands (Hodgson, 1946, 1962). In the Subantarctic, *Acrobolbus ochrophyllus* is rare on South Georgia (Hässel de Menéndez, 1977), but is frequent and locally common in the Prince Edward Islands, Îles Crozet and Îles Kerguelen (Grolle, 2002). The species appears to be frequent on Macquarie Island and the present records complete its geographical range in the Subantarctic.

Acknowledgements. The contribution of the third author to this work was financially supported by the Polish National Centre of Science through grant No. N N 303 469 338 and, partly, through the statutory fund of the Institute of Botany of the Polish Academy of Sciences. Thanks are due to the Curator of the herbarium at JE for kindly allowing us to study specimens cited in the paper, and to John J. Engel, Chicago, and Matt Renner, Sydney, for naming or checking determinations of some specimens. Robert R. Ireland, Washington, and S. Rob Gradstein, Paris, provided valuable comments on the manuscript and their assistance is gratefully acknowledged.

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