

## CHECKLIST OF LIVERWORTS AND HORNWORTS OF BANKS PENINSULA

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This article contains a list of liverworts and hornworts known from Banks Peninsula Ecological Region, divided into three sub-lists for the Port Hills, Herbert, and Akaroa Ecological Districts (Table 1, page 13).

### **Regional lists of liverworts**

Few regional liverwort species lists have been published in New Zealand. They exist for a number of island groups, Snares Islands (Fineran 1969), Auckland Islands (Fineran 1971), Antipodes Islands (Glenny et al. 1996), Rangitoto Island (Braggins 2007), Three Kings Islands (Braggins 1987), Kermadecs (Campbell 1977), and Chatham Islands (Glenny et al. in prep.), but only one list for a large main island area: Fiordland (Lewington 2006).

The list in this paper is the first for an ecological region on the drier eastern side of New Zealand. It shows the character of the liverwort flora at the opposite extreme to the rich and luxuriant flora of the western provinces of New Zealand, and for a region that has had its forests much reduced by fire and conversion to pasture.

Banks Peninsula already has lists of mosses (Macmillan 1996) and lichens (Lintott & Lintott 1996).

### **Method**

This list used as a starting point Rodney Lewington's 2007 Hinewai checklist and 2008 Stony Bay Stream checklist (for the recent addition to Hinewai Reserve of land in Stony Bay). It was then extended by searching the Allan Herbarium (CHR), Landcare Research, for specimens of other species. I then began adding to the list by doing fieldtrips to make the list more comprehensive: Mt Cavendish, Sugarloaf, Coopers Knob, Omahu Reserve, Mt Herbert, Herbert Scenic Reserve in Kaituna Valley, Mt Fitzgerald and Hikuika Stream, Ellangowan Scenic Reserve, Carews Peak Reserve, Hinewai including Stony Bay Stream, Armstrong Reserve, The Monument, Nikau Palm Gully, Bossu Road, and Devils Gap Reserve. These searches yielded about 72 species additional to those already known from existing collections and from Rodney Lewington's 2007 and 2008 Hinewai checklists.

All entries list vouchers, and all vouchers have been seen and their identity checked by me, unless stated otherwise. Rodney Lewington's vouchers for his Hinewai list were deposited in CHR, but they are incomplete. For names where there is no voucher at CHR ("n.v." in the list) the names are from Lewington (2007; 2008). CHR records can be seen for most of the collections cited at: <http://scd.landcareresearch.co.nz/Search/Search/CHR>

Names used in the list are those on the Landcare Research site *Nga Tipu o Aotearoa* (<http://nzflora.landcareresearch.co.nz/>). Otahuna, a collecting locality, is the valley north of Gibraltar Rock. Two Beckett collections are from Tarawera. This, according to Andersen (1927), is what is now called Mt Sinclair.

### **Collectors on Banks Peninsula**

AJF: Allan Fife, BHM: Bryony Macmillan, DG: David Glenny, DRG: David Given, GB: Garth Brownlie, HDW: Hugh Wilson, HMH: Helen Hodgson, JDL: John Lovis, JL: Jette Lewinsky, JMB: John Blackburn, JT: Jane Taylor, KMc: Kate McCombs, LBM: Lucy Moore, LRS: LR Stemmer, MJP: Murray Parsons, MJS: Margaret Simpson, R JL: Rodney Lewington, RM: Ruth Mason, RMS: Rudolf Schuster, n.v. = no voucher at CHR, not seen.

### **Composition of the flora and rarity**

The total number of species is ca. 201 (32% of the New Zealand total of 634 species), comprised of 197 liverworts and 4 hornworts.

For comparison, 234 species of moss have been recorded from Banks Peninsula Ecological Region (Macmillan 1996). This is 43% of the 542 moss species known from New Zealand (Glenny & Fife 2012).

Eighty-five species are known from single records on the Peninsula, 40% of the species recorded. Is this a reflection of few collections, or of true rarity on the Peninsula? Sources of single records are, in order of numbers of species: Mt Herbert 16, Stony Bay Stream 8, Hinewai Reserve 7, Mt Fitzgerald 6, Okuti Valley 4, Armstrong Reserve 3, Carews Peak 3, Omahu Reserve 3, The Monument 2, Kaituna Valley 2, Lighthouse Road 2, Bossu Road 1. Many of the species in Mt Herbert Reserve may be confined to that area. In other cases, for instance the two species only known from The Monument, it seems likely they have been overlooked at other sites. There are habitats that are very restricted in size, for instance the richest part of Stony Bay Stream that has seven single-specimen records. The forested stream habitat is only c. 50 m wide and surrounded by gorse scrub. It would once have been a habitat that occurred in similar streams along the eastern bays of the Peninsula.

Three to four species are undescribed: *Porella* aff. *viridissima* (Fig. 1, page 6) and *Siphonolejeunea* sp. (a) which is known from eastern provinces from East Cape to the Remarkables and Chatham Islands. There is an undescribed *Cephaloziella* on Stony Bay Peak and Flag Peak. There is a *Lophozia* species on Carews Peak that appears to be undescribed. The Stony Bay Peak material of *Paracromastigum macrostipum* differs somewhat from North Island specimens (from the Volcanic Plateau and Kaimai Range) and may be a distinct species.



**Figure 1** The undescribed *Porella* aff. *viridissima*. Young shoots are a more pure green than in *P. elegantula*, which has yellow-brown pigments.

It is only a matter of time before the introduced *Marchantia polymorpha* is found on the Peninsula as it is sometimes spread by planting out of native plants raised in nurseries for conservation or landscaping projects (e.g. at Tai Tapu, Osterholts Road bridge, 2013, DG11739).

### Unusual distributions

*Bazzania adnexa* is an extremely abundant species west of the Main Divide, but there are no records from Canterbury other than on Banks Peninsula where it is only known from Stony Bay Valley.

*Cephaloziella aenigmatica* is on a road bank at Reynolds Valley Road. The type and sole other specimen is from Mt Euclid in the Paparoa Range.

*Herbertus oldfieldianus* occurs in Ellangowan Scenic Reserve, Mt Herbert, and Mt Fitzgerald. The nearest site not on the Peninsula is at Arthur's Pass.

*Lejeunea subelobata* is known from four collections on Banks Peninsula, otherwise in New Zealand it is known only from Northland and Auckland (it also occurs in Australia).

*Lepidolaena berggrenii* occurs on Mt Herbert, and is a New Zealand endemic known only from two North Island localities, three South Island localities (all in the Southern Alps), and one Stewart Island locality.

*Metzgeria consanguinea* was reported by So (2002) for New Zealand from Sugarloaf, based on a Jack Elix specimen at Canberra Herbarium. This was

reported in error for *M. crassipilus* but according to So (M. So pers. comm.) the species is likely to be in New Zealand. The species appears to be present on Mt Cavendish Bluffs, even though I have been unable to find it on Sugarloaf. The Port Hills occurrence seems to be the sole New Zealand location.

*Metzgeria scobina* is at Cloud Farm at 620 m. Elsewhere in New Zealand it is known from Ruahine Range, Arthur Range, and Westland (Lake Kaniere, Lake Matheson). Overseas it is known from the Paletropics (Indonesia, Malaysia, New Guinea).

*Porella* aff. *viridissima* (Fig. 1, page 6) is known from Banks Peninsula, Mt Cass, Catlins, Chatham Island, and Campbell Island, and on Norfolk Island. The species is quite abundant in damp places on the Port Hills, less common at the wetter eastern end of the Peninsula. It also occurs in Christchurch Botanic Gardens in the Cockayne Memorial Garden, probably transported on a boulder from Banks Peninsula. It appears to be undescribed.

*Rectolejeunea ocellata* which is known from Nikau Palm Gully is a rare New Zealand endemic known otherwise from Raoul Island, and a number of North Island localities (Maunganui Bluff, Anaura Bay, Morere Bush, Lake Wairarapa, Porirua, and Wellington).

*Riccia nigrella* and *R. spongiosula* are two Australian species that were found on the northern slopes of the Otahuna Valley north of Gibraltar Rock in 2009 (Glenny et al. 2009), at NZMG E2478655 N5727787. They occur within an area only about 50 m x 50 m with *Riccia sorocarpa* and *Plagiochasma rupestre* (Fig 2). Searching nearby has failed to find further plants. They seem most likely to be new colonisers from spores that have blown from Australia. If



**Figure 2** *Plagiochasma rupestre* plants collected at Orton Bradley Park. This is a species that has only occasionally been found on the Peninsula.

they are from wind-blown spores, it is unexpected that two new colonisers have established so close to each other, but no other explanation of their presence suggests itself.

*Tricholepidozia lindenbergii* var. *papillata* is present in Stony Bay Stream. It was previously known only from the type from Whareorino Forest, south of Kawhia. The habitat is very similar in both cases, a protected overhanging soil bank.

### Factors influencing distribution

Liverworts need both moisture and light, while soil fertility seems never to be a limiting factor on Banks Peninsula. Most liverworts are intolerant of long dry periods. They are most luxuriant and diverse in places unaffected by dry spells and are therefore most abundant and diverse in high rainfall areas. Rainfall is higher on the peaks and interior of the Peninsula, and cloud keeps ridgetops and peaks damp even during summer. Rainfall is also higher in the south-east of the Peninsula than the north-west, and this is reflected in the number of species that are known only from Hinewai Reserve and Armstrong Reserve. Secondly, slopes and cliffs facing south have a much more abundant and diverse flora, especially at higher altitudes, because they receive less sun, resulting in lower temperatures and less evaporation of soil moisture. Streams with permanent water flow have a more abundant and diverse flora. A forest canopy helps to prevent drying out of sites by restricting light reaching the forest floor, but a dense and high forest canopy limits the diversity of species by filtering too much light. Liverworts compete with mosses, which are more dry-tolerant, but the mosses also form thick, single-



**Figure 3** *Porella elegantula*, growing with a lichen (*Pseudocyphellaria* sp.).

species mats in constantly wet sites such as cliffs under waterfalls (e.g. *Echinodium hispidum*), and in doing so outcompete liverworts.

Species that are common at the foot of bluffs where met by forests of five-finger, mahoe etc., on the main ridge of the Port Hills are *Balantiopsis diplophylla* var. *hockenii*, *Symphyogyna hymenophyllum*, *Lepidolaena taylorii*, *Marsupidium perpusillum*, *Plagiochila aculeata*, *Porella elegantula* (Fig. 3), and *Solenostoma inundatum*. Sites close to the ridges have a higher diversity of liverworts than the valley forests suggesting they are kept more constantly damp from low cloud cover and lower temperatures. The best places to search are at the foot of forested bluffs on their south side, where there are high light levels but some protection from drying by the adjacent forest. Good examples of such bluffs with forest at their feet are on the south side of The Monument, the south side of Sugarloaf, and Ellangowan Scenic Reserve.

In the valleys throughout, common species are *Monoclea forsteri* (lining waterways, especially where there is splashing), the epiphytes *Metzgeria furcata*, *Frullania deplanata*, *F. monocera*, and *Lejeunea primordialis*. The epiphytic flora on Banks Peninsula is not diverse.

### Rock outcrops

The rock outcrops with the most diverse liverwort flora are types 1–4 in the classification of Wisser & Buxton (2009). These are outcrops at higher elevation, with larger faces, high rainfall, and taller vegetation. Indication of good liverwort habitat is the presence of *Anaphalioides bellidioides*, *Polystichum vestitum*, *Ourisia lactea*, *Podocarpus hallii*, *Phormium cookianum*, any *Hymenophyllum* species, *Huperzia varia*, *Microsorium pustulatum*, and *Asplenium flabellifolium*. Not mentioned by Wisser & Buxton (2009) but very important for a diverse liverwort flora is aspect: the best bluffs for liverworts face south. Outcrops like Gibraltar Rock that are devoid of liverworts characteristically have *Vittadinia australis*, *Carex breviglumis*, *Vicia sativa*, and *Linum monogynum*, indicator species of Wisser & Buxton's (2009) communities 5–7.

### Effect of altitude

High points in the districts are:

Port Hills Ecological District: Coopers Knob 573 m, Cass Peak 546 m, Sugarloaf 496 m, and Mt Pleasant 499 m.

Herbert Ecological District: Mt Herbert 920 m, Bradley 855 m, Sinclair 841 m, Mt Fitzgerald 826 m, Carews Peak 794 m, and The Monument 711 m.

Akaroa Ecological District: Flag Peak 809 m, Stony Bay Peak 806 m, Lavericks Peak 755 m, Ellangowan 739 m, and Duvauchelle 738 m.

Eighty of the 198 species (32%) have been found only on ridges or outcrops over 500 m.

### Wet forests in valleys

Valleys with streams that flow throughout summer and have forest cover have a rich flora quite different from the rock outcrops. Some of this flora is on boulders in the stream beds, some on soil banks overhanging streams, and quite a lot of it is on the base of trees and on rotten logs near or bridging the streams. This flora is richest in Stony Bay Stream and Armstrong Reserve. A higher diversity of species can be found in the upper catchments at 400–600 m than at lower altitudes. At higher altitudes, the canopy is lower, and is sometimes less dense, allowing more light to the forest floor. For instance, in Armstrong Reserve, the richest area for liverworts has very sparse but large red beech trees, and a low canopy of five-finger, *Fuchsia*, and wineberry above the stream. The latter two species are deciduous, allowing more light into the stream bed during winter. Snow break also opens the canopy at higher altitudes.

### Open habitat flora that is visible in Spring

Exotic grasses and some herbs like vetch shade soil bank habitats and use soil moisture in summer, but some species of dry sites (e.g. *Targionia hypophylla*) complete reproduction by Spring before herbs smother the sites and the winter accumulation of soil moisture is used up. Species that behave in this way are *Targionia hypophylla*, *Plagiochasma australe*, *Asterella australis* (Fig. 4), and the four *Riccia* species.



**Figure 4** *Asterella australis* with archegoniophores, collected at Orton Bradley Park and growing among *Plagiochasma*. The *Asterella* heads are conspicuous but the thalli are hidden by the larger *Plagiochasma*. The archegoniophores have black capsules partly hidden by the white perianth segments that are joined at their tips.

## Conservation implications

Large number of species occur in all three Ecological Districts (EDs) or are likely to be there (e.g. if they are unrecorded from Herbert ED but known from Port Hills and Akaroa EDs). This indicates that the drier valleys of the Port Hills are worth conserving almost as much as the higher rainfall areas in the south-east. The Omahu Reserve and Ahuriri Reserve are the most valuable reserves in Port Hills ED for liverworts.

However, there is a part of the flora that is confined to the south-eastern valleys, especially Stony Bay Valley (Armstrong Reserve and the Stony Bay extension of Hinewai Reserve). The reserves in that valley are particularly valuable for that reason.

Rock outcrops at high altitude are particularly valuable, especially their south faces. Mt Herbert's south face is the outstanding habitat of this kind. Mt Herbert Reserve is the most valuable reserve for liverworts on Banks Peninsula, especially the high altitude parts. This is reflected in the 16 liverwort species that are known each from a single collection from the reserve.

Species present on the Peninsula that have a rare or threatened status in the national listing (Glenny et al. 2011) are:

At Risk, Naturally Uncommon: *Austrolejeunea hispida*, *Chiloscyphus erosus*, *Lepidozia elobata*, *Metzgeria scobina*, and *Rectolejeunea ocellata* (listed as *Microlejeunea ocellata*).

Taxonomically indeterminate species At Risk, Relict: *Porella* aff. *viridissima*, and Naturally Uncommon: *Siphonolejeunea* sp. (a).

There are two actions needed on Banks Peninsula to preserve the liverwort flora. One is the maintenance of reserve boundary fences. Where fences are down the effect of sheep trampling the ground vegetation inside the reserve is obvious. The more important one is fire control: many reserves are vulnerable to fire in dry periods (winter or summer), as shown by the fire that started with a lightning strike on the ridge between Hinewai valley and Stony Bay valley several years ago. However, native scrub and forest is making a come-back on Banks Peninsula as a result of the banning of fire as a farming practice. The natural regeneration of woody plants that is occurring over most parts of the Peninsula will greatly increase the available forest habitat for liverworts in the coming decades.

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**Table 1:** Liverworts and hornworts known from Banks Peninsula Ecological Region.

## HORNWORTS

### *Anthoceros laminiferus*

Port Hills: CHR264936 LBM Dry Bush Valley

Akaroa: CHR528932 HDW Okuti Valley

### *Megaceros pellucidus*

Port Hills: DG10731 Omahu Reserve, 360 m

Herbert: CHR528929 JDL Packhorse Saddle; DG10884 Mt Herbert, 800 m

Akaroa: RJL Hinewai n.v.; DG10854 Duvauchelle Peak, 600 m

### *Megaceros flagellaris*

Port Hills: DG10735 Omahu Reserve, 360 m; DG11201 Otahuna, 140 m

Herbert: DG10859 Orton Bradley Park, 60 m; DG11556a Mt Herbert Scenic Reserve, 700 m

Akaroa: CHR592401 RJL Hinewai; CHR264814 LBM Carews Peak, 660 m; DG11026 Peraki Saddle, 620 m; DG11753 Nikau Palm Gully, 304 m

### *Phaeoceros carolineanus*

Port Hills: CHR161297 BHM Dyers Pass Rd; DG10762 Rhodes Spring, 500 m

Herbert: CHR528930 HDW Kaituna Valley, DG10955 Mt Fitzgerald, 550 m

## LIVERWORTS

### *Acrobolbus concinnus*

Herbert: DG5987 Montgomery Scenic Reserve, 500 m

### *Acromastigum colensoanum*

Akaroa: CHR592402 RJL Hinewai; DG11229 Stony Bay Stream, 210 m; DG11245 Armstrong Reserve, 600 m

Published by Lewington (2008) as *A. aff. colensoanum*; voucher CHR592402 says “smaller than usual”.

### *Andrewsianthus cuspidatus*

Herbert: DG11591 The Monument, 670 m

***Aneura lobata ssp. australis***

Herbert: DG10882a Mt Herbert, 800 m

Akaroa: DG10853 Duvauchelle Peak, 600 m

***Aneura orbiculata***

Herbert: CHR267918 BHM Prices Valley

Akaroa: DG11236 Stony Bay Stream, 380 m

***Aneura aff. novoguineensis***

Herbert: DG11017 Mt Fitzgerald, 760 m

Akaroa: DG11025 Peraki Saddle, 620 m

***Asterella australis***

Port Hills: CHR241499 LRS Redcliffs; DG10717 Sugarloaf, 400 m; DG11208 Otahuna, 250 m; DG11817 near Coopers Knob, 420 m; DG11850 Omahu Reserve, 170 m

Herbert: CHR163372 BHM The Monument; DG10887 Orton Bradley Park, 300m

***Asterella tenera***

Port Hills: DG10732 Omahu Reserve, 360 m

Herbert: CHR240604 BHM Kaituna Valley; CHR267915 BHM Prices Valley, 70 m; DG10862 Orton Bradley Park, 800 m

Akaroa: CHR592403 RJL Hinewai; DG11238 Stony Bay Valley, 450 m

***Austrolejeunea olgae***

Port Hills: DG11203 Otahuna, 140 m

Herbert: DG5671 Kaituna V, 360 m; DG11022 Mt Fitzgerald, 500 m

Akaroa: CHR592404 RJL Hinewai; DG5658 Okuti Valley; DG11263 Armstrong Reserve, 600 m; DG11867b pro parte, Devils Gap, 543 m

***Austrolejeunea hamata***

Akaroa: CHR592439 RJL Hinewai; DG11874b Devils Gap, 393 m

***Austrolejeunea hispida***

Herbert: DG10891c Orton Bradley, 300 m

***Balantiopsis diplophylla var. diplophylla***

Port Hills: DG10761 Rhodes Spring, 500 m; CHR528945 HDW Plot 476, 500 m

Herbert: DG10938 Kaituna Valley, 380 m; DG10956 Mt Fitzgerald, 550 m; DG11559 Mt Herbert, 666 m

Akaroa: DG10799, Hinewai, 400 m; CHR351452 JL Peraki Reserve

***Balantiopsis diplophylla* var. *hockenii***

Port Hills: DG10718 Sugarloaf, 400 m; DG10746 Cass Peak, 520 m

Herbert: DG10992 Mt Fitzgerald, 760 m

Akaroa: DG11853 Gap Road, 555 m

***Balantiopsis montana***

Akaroa: DG11224 Stony Bay Stream, 210 m

***Bazzania adnexa***

Akaroa: RJL Hinewai n.v.; DG11255 Armstrong Reserve, 600 m

Lewington (2007) mentions *Bazzania* aff. *adnexa*: from Hinewai Reserve, Stony Bay Gully, on a buttress of *Nothofagus fusca*. I consider this is *B. adnexa*, a variable species.

***Cephaloziella aenigmatica***

Akaroa: DG11045 Okuti Valley, 400 m

***Cephaloziella muelleriana***

Port Hills: DG10730b Omaha Reserve, 360 m

***Cephaloziella* sp.**

Port Hills: DG10259 Ahuriri Reserve, 340 m

Akaroa: CHR459851 p.p., S Huang & AJF, Hinewai, 400 m (included in specimen of *Solenostoma inundatum*)

***Cephaloziella* sp.**

Akaroa: DG10813, Stony Bay Peak, 760 m; DG11269 Flag Peak, 740 m

Shoots are green without secondary pigments, 200 µm wide, leaves 100 µm long, highly toothed (spinose), conduplicate, walls thin, trigones absent, underleaves bifid, stellate multicellular gemmae at shoot apex.

***Chandonanthus squarrosus***

Akaroa: CHR514721 BHM Hinewai

***Cheilolejeunea mimosa***

Port Hills: DG10719 Sugarloaf, 400 m; DG10964 Mt Cavendish Bluffs, 350 m

Herbert: DG10877 Mt Herbert, 800 m; DG11001 Mt Fitzgerald, 760 m

***Chiloscyphus anisobus***

Herbert: DG10991 Mt Fitzgerald, 760 m

***Chiloscyphus aperticaulis***

Herbert: CHR528910 HDW Mt Fitzgerald, 490 m

***Chiloscyphus austrigenus***

Herbert: CHR528907 HDW Mt Fitzgerald, 490 m

***Chiloscyphus bispinosus***

Port Hills: CHR384148 AJF Godley Head; DG10728 Omahu Reserve, 360 m;  
DG10763 Rhodes Spring, 500 m

Herbert: DG11004 Mt Fitzgerald, 760 m

Akaroa: CHR573793! RJL Hinewai, CHR406329 AJF Reynolds Valley Rd

***Chiloscyphus canaliculatus***

Port Hills: KW Allison H6345, Bridle Path near Summit Road (cited in Engel 2010, p. 106); CHR349463 AJF, Bridle Path

Herbert: DG11555 Mt Herbert, 700 m

Akaroa: DG11042 Carews Peak, 660 m; DG11910 Saddle Hill, 740 m

***Chiloscyphus cuspidatus***

Port Hills: DG10751 Cass Peak, 520 m; DG10954 Bowenvale Valley, 400 m

Herbert: DG10941 Kaituna Valley, 360 m; DG11580 The Monument, 668 m

Akaroa: CHR348608 JL Otepatotu; DG10817 Cloud Farm, 620 m

***Chiloscyphus erosus***

Port Hills: DG10711 Sugarloaf, 400 m; DG10747 Omahu Reserve, 360 m

Akaroa: CHR571423 RJL Hinewai; DG9275 Okuti Valley, 250 m

***Chiloscyphus helmsianus***

Akaroa: DG9212 Hinewai, 300 m

The way to find this inconspicuous species is to rub the bases of tree fern trunks with your hands and smell your hands for the pungent stink-bug smell produced by this species.

***Chiloscyphus herzogii***

Akaroa: RJL Stony Bay Stream, n.v.

***Chiloscyphus lentus***

Herbert: BHM 79/251 Prices Valley, 60 m (cited in Engel 2010, p. 31); DG10957 Mt Fitzgerald, 550 m

Akaroa: CHR592407 RJL Hinewai, CHR163384 BHM near Cabstand; DG11230 Stony Bay Stream, 210 m

***Chiloscyphus mittenianus* var. *mittenianus***

Herbert: DG10883 Mt Herbert, 800 m; DG11628 Mt Herbert, 797 m

***Chiloscyphus muricatus***

Port Hills: CHR527791 HDW south of Gibraltar Rock, CHR607121 BHM Coopers Knob; DG10712 Sugarloaf, 400 m

Herbert: DG10930 Kaituna Valley, 380 m, CHR257058 BHM Prices Valley, 70 m

Akaroa: CHR592408 RJL Hinewai; DG5651 Okuti Valley, 190 m; DG10817 Cloud Farm 620 m, CHR406352 AJF Wainui, 100 m; DG11748 Nikau Palm Gully, 420 m

***Chiloscyphus novae-zeelandiae* var. *grandistipulus***

Akaroa: CHR405371 AJF Kinloch Road, det. JJ Engel

***Chiloscyphus novae-zeelandiae* var. *novae-zeelandiae***

Port Hills: CHR528921 HDW above Teddington near Gebbies Pass, Plot 0257, 180 m

Herbert: DG10885 Mt Herbert, 800 m

Akaroa: CHR571428 RJL Hinewai

***Chiloscyphus parvispineus***

Herbert: DG11556b Mt Herbert, 700 m

***Chiloscyphus perpusillus***

Herbert: DG11586 The Monument, 668 m

***Chiloscyphus semiteres* var. *semiteres***

Port Hills: DG9170 Jollies Bush Scenic Reserve, 300 m

Herbert: CHR528923 HDW Port Levy; DG10855b Orton Bradley Park, 60 m

Akaroa: CHR592409 RJL Hinewai

***Chiloscyphus subporosus* var. *inflexifolius***

Herbert: DG10897 Mt Herbert, 840 m

***Chiloscyphus subporosus* var. *subporosus***

Port Hills: DG10713 Sugarloaf, 400 m; CHR265021 BHM Dry Bush, 330 m

Herbert: CHR556462 JMB Port Levy Rd, CHR10922 Kaituna Valley, 360 m

Akaroa: CHR592410 RJL Hinewai, CHR512876 BHM Otanerito Bay; DG11239a Stony Bay Stream, 450 m

***Chiloscyphus trialatus***

Akaroa: DG11041a Carews Peak, 660 m

***Clasmatocolea strongylophylla***

Herbert: DG10873a Mt Herbert, 800 m

***Cuspidatula monodon***

Herbert: DG11009 Mt Fitzgerald, 760 m

Akaroa: CHR348632 JL Otepatotu; CHR405355 AJF Mt Bossu; DG10832 Ellangowan, 630 m

***Diplasiolejeunea plicatiloba***

Herbert: DG5678a Kaituna Spur, 600 m

Akaroa: CHR592412 RJL Hinewai; DG11239c Stony Bay Stream, 450 m

***Diplophyllum obtusifolium ssp. domesticum***

Herbert: KW Allison H6680 at CHR, TWN Beckett Mt Sinclair (“Tarawera”);  
 DG11010 Mt Fitzgerald, 760 m  
 Akaroa: DG11033 Peraki Saddle 620 m

***Drepanolejeunea aucklandica***

Akaroa: DG5950 Hinewai, 400 m

***Fossombronia pusilla***

Port Hills: DG10267 Otahuna, 330 m

***Fossombronia reticulata***

Akaroa: CHR528931 HDW Okuti Valley

***Frullania aterrima***

Herbert: DG10984 Mt Fitzgerald, 740 m  
 Akaroa: DG10835b Ellangowan, 630 m

***Frullania deplanata***

Port Hills: DG10724 Sugarloaf, 400 m; DG10741 Omahu Reserve, 300 m  
 Herbert: CHR556478 JMB Port Levy Road  
 Akaroa: CHR592413 RJL Hinewai; DG10821 Cloud Farm, 620 m; DG11034  
 Carews Peak, 660 m; DG11216 Stony Bay Stream, 120 m

***Frullania falciloba***

Port Hills: CHR528914 HDW The Tors; CHR11205 Otahuna, 140 m  
 Herbert: DG10894 Orton Bradley Park, 300 m; CHR267936 BHM Little Akaloa  
 Akaroa: DG10804 Stony Bay Peak, 570 m

***Frullania fugax***

Akaroa: CHR592415 pro parte RJL Hinewai

***Frullania media***

Herbert: DG5676 Kaituna Spur, 550 m  
 Akaroa: CHR592414 RJL Hinewai; CHR592414 RJL Hinewai

***Frullania monocera* (including *F. subhampeana* and *F. hampeana*)**

Port Hills: DG6049 Hoon Hay Reserve, 400 m; DG10714 Sugarloaf, 400 m;  
 DG10738 Omahu Reserve, 360 m  
 Herbert: DG5674a Kaituna Spur, 550 m; CHR267732 BHM Prices Valley, 70 m;  
 DG11565b Mt Herbert, 650 m  
 Akaroa: CHR592417 RJL Hinewai; DG5902 Palm Gully, 40 m; DG11867b, Devils  
 Gap, 543 m

***Frullania nicholsonii***

Akaroa: CHR348617 JL Otepatotu

***Frullania patula***

Port Hills: DG10255 Otahuna, 220 m

Herbert: DG11014 Mt Fitzgerald, 760 m

Akaroa: CHR592418 RJL Hinewai; DG11239b Stony Bay Stream, 450 m

***Frullania pentapleura*** (including *F. solanderiana*),

Port Hills: DG10742 Omaha Reserve, 300 m; DG11204 Otahuna, 140 m

Herbert: DG5906 Prices Valley; DG10895 Orton Bradley Park, 300 m

Akaroa: CHR528956 HDW Benoit; CHR592416 RJL Hinewai; DG11215 Stony Bay Stream, 120 m; DG11897b Saddle Hill, 760 m

Specimen DG10895 from Orton Bradley Park is intermediate between this and *F. probosciphora*, suggesting the distinction between the species can be questioned. It has a stylus matching *F. pentapleura* but has the very strongly sinuose leaf cell walls of *F. probosciphora*.

***Frullania probosciphora***

Herbert: CHR528946 HDW Kaituna Valley, 240 m

***Frullania ptychantha***

Herbert: DG11013b Mt Fitzgerald, 760 m

***Frullania pycnantha***

Herbert: CHR240842 BHM Prices Valley, 70 m

***Frullania rostrata***

Akaroa: CHR592415 RJL Hinewai

***Frullania scandens***

Herbert: DG11013a Mt Fitzgerald, 760 m

Akaroa: CHR592155 AJF Otepatotu

***Frullania spinifera***

Port Hills: DG10663 Dry Bush Stream, 60 m

Herbert: DG10935 Kaituna Valley, 380 m

Akaroa: RJL Hinewai n.v.; CHR528963 HDW Okuti Valley

***Frullania squarrosula***

Herbert: DG5909b Prices Valley, 50 m

***Frullania subrostrata***

Port Hills: CHR528919 HDW Mt Pleasant, 370 m

***Gymnomitrium cuspidatum***

Herbert: DG11617 Herbert Scenic Reserve, 626 m

***Haplomitrium gibbsiae***

Akaroa: DG11895, Bossu Road near Peraki Saddle, 540 m



***Harpalejeunea latitans***

Port Hills: DG10737 Omaha Reserve, 360 m

Herbert: DG11573 The Monument, 652 m

Akaroa: RJL Hinewai n.v.; DG5674b Peraki Saddle, 500 m

***Hepatostolonophora paucistipula***

Herbert: DG10882b Mt Herbert, 800 m; DG11606 Herbert Scenic Reserve, 626 m

***Herbertus oldfieldianus***

Herbert: DG10906 Mt Herbert, 840 m; DG10995a Mt Fitzgerald, 760 m;  
DG11582 The Monument, 668 m

Akaroa: DG10835 Ellangowan, 630 m

***Heteroscyphus allodontus***

Herbert: DG10928 Kaituna Valley, 370 m; DG11590 The Monument, 670 m

Akaroa: RJL Hinewai n.v.

***Heteroscyphus biciliatus***

Herbert: DG11616 Herbert Scenic Reserve, 626 m

Akaroa: CHR608268 RJL Hinewai

***Heteroscyphus billardierei***

Akaroa: CHR528961 HDW Armstrong Reserve, 650 m

***Heteroscyphus coalitus***

Port Hills: DG10736 Omaha Reserve, 360 m

Akaroa: DG11228a Stony Bay Stream, 210 m

***Heteroscyphus compactus***

Akaroa: CHR608273 RJL Hinewai

***Heteroscyphus cuneistipulus***

Akaroa: RJL Hinewai n.v.

***Heteroscyphus echinellus* var. *echinellus***

Herbert: DG11564b Mt Herbert, 650 m

Akaroa: CHR592406 RJL Hinewai; DG11251a Armstrong Reserve, 600 m

***Heteroscyphus knightii***

Port Hills: DG10723 Sugarloaf, 400 m

Herbert: DG10874a Mt Herbert, 640 m; DG10995b Mt Fitzgerald, 760 m

***Heteroscyphus normalis***

Port Hills: DG10722 Sugarloaf, 400 m; DG10969 Mt Cavendish, 350 m

Akaroa: CHR 608272 RJL Hinewai; DG10850 Otepatotu, 640 m; DG11221a  
Stony Bay Stream, 210 m; DG11752 Nikau Palm Gully, 304 m

***Heteroscyphus triacanthus***

Herbert: DG10993 Kaituna Valley, 380 m; DG11585 The Monument, 668 m;  
 DG11007 Mt Fitzgerald, 760 m; DG11605 Herbert Scenic Reserve, 626 m  
 Akaroa: DG11749 Nikau Palm Gully, 380 m

***Hygrolembidium acrocladum***

Akaroa: DG11746 Lighthouse Road, 630 m

***Hymenophyton flabellatum***

Herbert: DG11020 Mt Fitzgerald, 500 m  
 Akaroa: CHR592419 RJL Hinewai

***Hymenophyton leptopodum***

Herbert: DG10932 Kaituna Valley, 380 m; DG11018 Mt Fitzgerald, 500 m;  
 DG11614b Herbert Scenic Reserve, 626 m  
 Akaroa: CHR592420 RJL Hinewai; DG11236 Stony Bay Stream, 380 m;  
 DG11253 Armstrong Reserve, 600 m; DG5997 Peraki Saddle, 500 m

***Isotachis lyallii***

Akaroa: DG11038 Carews Peak 660 m

***Isotachis montana***

Port Hills: DG10260 Omahu Reserve, 340 m  
 Herbert: DG10898 Mt Herbert, 840 m  
 Akaroa: CHR462543 AJF Hinewai; DG5670 Okuti Valley, 340 m; DG11032  
 Peraki Saddle, 620 m

***Lamellocolea granditexta***

Akaroa: CHR348939 JL1382 Otepatotu; CHR405351 AJF Bossu Road 120 m;  
 DG11877 Devils Gap, 506 m

***Lejeunea oracola***

Akaroa: DG11237b Stony Bay Stream, 380 m

***Lejeunea primordialis***

Port Hills: DG10727 Omahu Reserve, 360 m; DG10965 Mt Cavendish Bluffs, 350  
 m  
 Herbert: DG10934 Kaituna Valley, 380 m  
 Akaroa: DG5996 Peraki Saddle, 500 m

***Lejeunea subelobata***

Herbert: DG10921 Kaituna Valley, 360 m  
 Akaroa: CHR592421 RJL Hinewai; DG11027 Peraki Saddle, 620 m; DG11757  
 Nikau Palm Gully, 300 m

***Lejeunea* sp. (a)** (= AK291280 pers. comm. Matt Renner 2013)

Herbert: DG11598 Herbert Scenic Reserve, 699 m

***Lembidium nutans***

Herbert: DG11005 Mt Fitzgerald, 760 m

Akaroa: DG10847 Otepatotu, 640 m; DG11024b Peraki Saddle, 620 m;

DG11876 Devils Gap, 506 m

***Lepicolea attenuata***

Herbert: DG10982 Mt Fitzgerald, 740 m

***Lepidogyna hodgsoniae***

Herbert: DG10867a Mt Herbert, 800 m

Akaroa: DG11046 Carews Peak, 660 m

***Lepidolaena berggrenii***

Herbert: DG11566b Herbert Scenic Reserve, 650 m; DG11625 Herbert Scenic Reserve, 633 m

***Lepidolaena reticulata***

Herbert: DG10912 Mt Herbert, 840 m; DG10995b Mt Fitzgerald, 760 m

Akaroa: DG11266 Armstrong Reserve, 530 m

***Lepidolaena taylorii***

Port Hills: CHR528966 HDW Hoon Hay Reserve; CHR459178 AJF Lyttelton Reserve

Herbert: DG10999 Mt Fitzgerald, 760 m; DG11572 The Monument, 650 m

Akaroa: CHR592422 RJL Hinewai; DG10822 Cloud Farm, 620 m; DG11039a Carews Peak, 660 m

***Lepidozia concinna***

Herbert: DG11561 Mt Herbert, 666 m

Akaroa: CHR163133 MJS Flag Peak; DG5992 Peraki Saddle, 500 m; DG11247 Armstrong Reserve, 600 m

***Lepidozia elobata***

Port Hills: DG11824a, 1 km S of Coopers Knob, 414 m

Herbert: DG11588b The Monument, 670 m

***Lepidozia laevifolia* var. *laevifolia***

Port Hills: DG10758 Cass Peak, 520 m

Herbert: DG10869 Mt Herbert, 800 m; DG11012b Mt Fitzgerald, 760 m; DG11597 Mt Herbert, 911 m

Akaroa: CHR592423 RJL Hinewai; DG11249 Armstrong Reserve, 600 m; DG11859 Devils Gap, 543 m

***Lepidozia pendulina***

Akaroa: DG11254 Armstrong Reserve, 600 m

***Lepidozia ulothrix***

Akaroa: RJL Hinewai n.v.

***Leptoscyphus* sp. 1** (apex entire or slight emarginate)

Herbert: DG10916 Mt Herbert, 840 m; DG11016 Mt Fitzgerald, 760 m

Akaroa: DG10831b Ellangowan, 630 m; DG11040 Carews Peak 660 m

***Leptoscyphus* sp. 2** (leaf bifid)

Herbert: DG10868b Mt Herbert, 800 m

***Lopholejeunea colensoi***

Herbert: DG11565c Mt Herbert, 650 m

***Lopholejeunea plicatiscypha***

Herbert: DG10903b Mt Herbert, 840 m

***Lophozia multicuspidata***

Herbert: DG10997b Mt Fitzgerald, 760 m

***Lophozia* sp.** (perianths with lamellae)

Akaroa: DG 11044 Carews Peak, 660 m

***Lunularia cruciata***

Port Hills: DG10709 Dyers Pass, 300 m

Herbert: CHR163376 BHM Packhorse Saddle; DG10856 Orton Bradley Park, 60 m

Akaroa: DG11220 Stony Bay Valley, 120 m; DG11751 Nikau Palm Gully, 304 m

***Marchantia berteroana***

Akaroa: RJL Hinewai n.v.; DG10818 Cloud Farm, 620 m

***Marchantia foliacea***

Port Hills: DG10734 Omaha Reserve, 360 m; DG11198 Otahuna, 140 m

Herbert: CHR163378 BHM Kaituna Valley; DG10855 Orton Bradley Park, 60 m

Akaroa: CHR357589 BHM Pearce; DG10840 Hinewai, 540 m; DG11029 Peraki Saddle, 620 m; DG11270 Stony Bay Valley, 740 m

***Marsupidium knightii***

Port Hills: DG10756 Cass Peak, 520 m

Herbert: DG10990 Mt Fitzgerald, 740 m; DG11584 The Monument, 668 m

Akaroa: DG10830a Ellangowan, 630 m

***Marsupidium perpusillum* var. *perpusillum***

Port Hills: DG10710 Sugarloaf, 400 m

Herbert: DG10878 Mt Herbert, 800 m; DG10958 Mt Fitzgerald, 550 m

Akaroa: CHR405353 pro parte AJF Bossu; DG11259 Armstrong Reserve, 600 m

***Marsupidium surculosum***

Akaroa: DG10831a Ellangowan, 660 m

***Metzgeria consanguinea***

Port Hills: DG10966 Mt Cavendish Bluffs, 350 m

***Metzgeria crassipilus***

Port Hills: DG11845 Coopers Knob, 530 m

Akaroa: RJL, Hinewai, n.v.; DG11906 Saddle Hill, 800 m

***Metzgeria flavovirens***

Port Hills: CHR528940 HDW Kennedys Bush; DG10760a Cass Peak, 520 m

Herbert: CHR240849 BHM Prices Valley, 70 m

Akaroa: CHR592425 RJL Stony Bay Peak, 790 m

***Metzgeria furcata***

Port Hills: CHR509252 BHM Ahuriri Valley, 200 m

Herbert: CHR135085 RMS, CHR240843 BHM Prices Valley, 70 m

Akaroa: CHR592431 RJL Hinewai; DG11214 Stony Bay Valley, 120 m

***Metzgeria leptoneura***

Herbert: CHR528955 HDW Mt Herbert; DG10881 Mt Herbert, 800 m; DG11594 The Monument, 670 m

Akaroa: DG10836 Ellangowan, 660 m; DG11031 Peraki Saddle, 620 m

***Metzgeria scobina***

Akaroa: DG10823 Cloud Farm, 620 m

***Monoclea forsteri***

Port Hills: CHR528965 HDW south of Gibraltar Rock, 300 m; CHR528965 HDW Omahu Reserve; DG10740 Omahu Reserve, 300 m

Herbert: CHR135086 RMS, JT Kaituna Valley; DG11019 Mt Fitzgerald, 500 m

Akaroa: CHR161700 DRG Boss Road east of Bossu, 360 m; CHR279870 BHM Dan Rogers Creek; DG10837 Hinewai, 540 m; DG11747 Nikau Palm Gully, 420 m

*Monoclea* is a large and obvious species that is found around waterfalls and cascades in streams. Its absence from many of the streams of Banks Peninsula indicates that its presence is patchy.

***Pachyhistochila colensoana***

Herbert: DG5669 Kaituna Valley, 340 m

Akaroa: DG10812 Stony Bay Peak, 760 m; DG10852 road near Otepatotu, 560 m; DG11024a Peraki Saddle, 620 m

Akaroa: DG11745b Lighthouse Road, 630 m

***Pallavicinia xiphoides***

Port Hills: CHR528939 HDW Mt Pleasant; DG11200 Otahuna, 140 m; DG11848 Omahu Reserve, 172 m

Herbert: DG10927 Kaituna Valley, 380 m; DG11558 Mt Herbert, 666 m

Akaroa: CHR592435 RJL Hinewai

***Paracromastigum* aff. *macrostipum***

Akaroa: DG10815 Stony Bay Peak, 760 m

This specimen is a *Paracromastigum* and fits this species best, but the underleaves are not a good match for *P. macrostipum* as the lobes are very long and narrow: 220 µm long, bifid x 0.64, the larger lobe 3 cells wide at lobe base, 9 cells high, ending in a single cell.

***Plagiochasma rupestre* (Fig. 2, page 7)**

Port Hills: DG10249 Otahuna, CHR565006 KMc Heathcote

Herbert: DG11567 Orton Bradley Park, 290 m

***Plagiochila aculeata* (previously known as *P. baileyana*)**

Port Hills: DG10720 Sugarloaf, 400 m; DG10754 Cass Peak, 520 m; DG 11820 near Coopers Knob, 420 m

Herbert: DG10867c Mt Herbert, 800 m; DG10924 Kaituna Valley, 360 m;

CHR267920 BHM Prices Valley, 70 m; DG11579 The Monument, 668 m

Akaroa: CHR528947 HDW Reynolds Valley; DG10816 Cloud Farm, 620 m; DG11271 Armstrong Reserve, 800 m; DG11902 Saddle Hill, 800 m

***Plagiochila arbuscula* (previously known as *P. obscura*)**

Port Hills: DG10257 Otahuna, 220 m

Herbert: CHR240833 BHM Prices Valley

Akaroa: DG11232 Stony Bay Stream, 210 m

***Plagiochila banksiana***

Herbert: DG10870 Mt Herbert, 800 m; DG11608 Herbert Scenic Reserve, 626 m

Akaroa: CHR592433 RJL Hinewai; DG11262 Armstrong Reserve, 600 m

***Plagiochila caducifolia***

Herbert: DG10890b Orton Bradley Park, 300 m; it could be this species, the leaves fragment easily but there are no leafless stems.

***Plagiochila circinalis***

Herbert: DG10903a Mt Herbert, 840 m; DG11615 Herbert Scenic Reserve, 626 m

Akaroa: CHR241494 BHM Ellangowan ; DG10851 Otepatotu, 640 m

***Plagiochila circumdentata***

Herbert: DG10872 Mt Herbert, 800 m; DG11018 Mt Fitzgerald, 760 m

Akaroa: DG10805 Stony Bay Peak, 760 m; DG11008 Carews Peak, 660 m

***Plagiochila colensoi*** (previously known as *P. lyallii* Mitt. var. *lyallii*)

Akaroa: CHR592426 RJL Hinewai

***Plagiochila deltoidea***

Port Hills: DG11840 Coopers Knob, 510 m

Herbert: DG10907 Mt Herbert; CHR267935 BHM Pearce; CHR592428 RJL

Hinewai; DG10846 Otepatotu, 640 m; DG11268 Armstrong Reserve, 600 m

***Plagiochila fasciculata***

Akaroa: RJL Hinewai n.v.

This record is probably *P. aculeata*, which is the most common *Plagiochila* on Banks Peninsula.

***Plagiochila fuscella* var. *fuscella*** (previously known as *P. retrospectans*)

Herbert: CHR577163 HMH Mt Herbert; DG11612 Herbert Scenic Reserve, 626 m; DG10879a Mt Herbert, 800 m

***Plagiochila gigantea***

Akaroa: CHR 608269 RJL Hinewai; DG11261 Armstrong Reserve, 600 m

***Plagiochila incurvicolla***

Herbert: DG10915 Mt Herbert, 840 m

***Plagiochila intertexta*** (= *P. sinclairii*)

Port Hills: DG10256 Otahuna, 220 m

Herbert: DG10902 Mt Herbert, 840 m; DG10920 Kaituna Valley, 360 m;

DG11023 Mt Fitzgerald, 500 m

Akaroa: DG11028 Peraki Saddle, 620 m

***Plagiochila radiculosa***

Herbert: DG10985 Mt Fitzgerald, 740 m

Akaroa: DG10834 Ellangowan, 630 m; DG11242 Armstrong Reserve, 600 m

***Plagiochila stephensoniana***

Port Hills: DG11847 Omaha Reserve, 170 m

Herbert: DG10942 Kaituna Valley, 380 m; CHR267929 BHM Prices Valley, 70 m

Akaroa: CHR592432 HDW7001 Hinewai, 325 m; DG11226 Stony Bay Valley, 210 m

***Plagiochilion conjugatum***

Akaroa: RJL Hinewai n.v.

***Porella elegantula***

Port Hills: DG10725 Sugarloaf, 400 m; DG11206 Otahuna, 140 m

Herbert: CHR528920 HDW Kaituna Valley; CHR528918 HDW head of Purau Bay, 560 m; DG10867b Mt Herbert, 800 m; DG10983 Mt Fitzgerald, 740 m; DG11578 The Monument, 652 m

Akaroa: CHR279867 BHM Dan Rogers Gully; CHR241676 BHM Ellangowan; DG10845 Otepatotu, 640 m; DG11267 Armstrong Reserve, 530 m; DG11750 Nikau Palm Gully, 304 m; DG11898 Saddle Hill, 760 m

***Porella pulcherrima***

Herbert: DG11599 Herbert Scenic Reserve, 699 m

***Porella* aff. *viridissima***

Port Hills: DG10268 Otahuna; DG10755 Cass Peak, 520 m

Herbert: CHR240834 BHM Prices Valley; CHR163129 BHM Kaituna Valley; DG10700 Okains Bay, 335 m; DG10891 Orton Bradley Park, 300 m

Akaroa: DG10843 Hinewai, 420 m; DG11866 Devils Gap, 543 m

***Radula aneurismalis***

Herbert: DG10996 Mt Fitzgerald, 760 m

***Radula australiana* (previously known as *R. buccinifera*)**

Port Hills: DG10757 Cass Peak, 520 m

***Radula "demissa"* (previously also known as *R. buccinifera*)**

Herbert: DG10935b Kaituna Valley, 380 m

Akaroa: DG10867 Devils Gap, 543 m

***Radula retroflexa* var. *fauciloba***

Akaroa: DG10827b Ellangowan, 630 m

***Radula strangulata* (previously known as *R. silvosa*)**

Port Hills: DG10715 Sugarloaf, 400 m

Herbert: DG10892 Orton Bradley Park, 300 m

Akaroa: CHR592434 RJL Hinewai; DG11905 Saddle Hill, 800 m



***Radula physoloba***

Herbert: DG5678b Kaituna Spur Scenic Reserve, 600 m

Akaroa: CHR405353 AJF Bossu

***Radula uvifera***

Akaroa: CHR592429 RJL Hinewai

***Rectolejeunea ocellata***

Akaroa: DG5900 Nikau Palm Gully, 40 m

***Riccardia aequicellularis***

Herbert: DG10863 Mt Herbert, 800 m

***Riccardia aequitexta***

Port Hills: DG10730a Omahu Reserve, 360 m

Akaroa: RJL, Hinewai, n.v.

***Riccardia alba***

Port Hills: DG10749 Omahu Reserve, 360 m

Herbert: DG10960 Morice Settlement Rd, 340 m

Akaroa: CHR592430 RJL Hinewai n.v.

***Riccardia australis***

Herbert: DG11609 Herbert Scenic Reserve, 626 m

***Riccardia bipinnatifida***

AKU71200 "Banks Peninsula" HDW det EA Brown (Brown & Braggins 1989, p. 72)

Herbert: DG10896 Mt Herbert, 840 m

***Riccardia colensoi***

Port Hills: DG10744 Omahu Reserve, 360 m

***Riccardia crassa***

Akaroa: DG11258 Armstrong Reserve, 600 m

***Riccardia nitida***

Akaroa: DG11260 Armstrong Reserve, 600 m

***Riccardia pusilla***

Akaroa: RJL Hinewai n.v.

***Riccardia* aff. *pseudodendroceros***

Herbert: DG10861 Mt Herbert, 800 m

The specimen lacks swollen epidermal cells of the type mentioned in the protologue. Its dimensions fit no others except *R. cochleata*, but it lacks the thicker walled, angled wing cells of that species. *Riccardia pseudodendroceros* is only known from the type from Mt Euclid, Paparoa Range. It may be that the Mt Herbert specimen represents a new species to New Zealand. The thallus is wide for a *Riccardia* and thin (300 µm), but not thin enough to be *R. pennata* (thallus 120–175 µm thick) although it looks like it and is in tussockland habitat that is preferred by *R. pennata*.

***Riccia crystallina***

Port Hills: CHR265391 MJP Jollies Bush

***Riccia nigrella***

Port Hills: DG10249 Otahuna, 220 m

***Riccia sorocarpa***

Port Hills: KWA H5873 Port Hills Summit Road (identification uncertain);  
DG10250 Otahuna, 220 m

***Riccia spongiosa***

Port Hills: DG10252 Otahuna, 220 m

***Schistochila ciliata***

Akaroa: DG11257 Armstrong Reserve, 600 m

***Schistochila kirkiana***

Herbert: DG11003 Mt Fitzgerald, 760 m

***Schistochila repleta***

Akaroa: DG11235 Stony Bay Stream, 380 m. The specimen lacks leaf lamellae, but the amount of material is very limited. It is most likely to be *S. repleta*.

***Siphonolejeunea nudipes* var. *nudipes***

Port Hills: DG10716 Sugarloaf, 400 m

Herbert: DG10923 Kaituna Valley, 370 m; DG11576 The Monument, 652 m;  
DG11600 Herbert Scenic Reserve, 699 m

Akaroa: DG5952 Hinewai; DG10848 Hinewai, 440 m, DG5995 Peraki Saddle,  
500 m

***Siphonolejeunea nudipes* var. *magnicarinata***

Akaroa: DG11237a Stony Bay Stream, 380 m

***Siphonolejeunea* sp. (a)**

Port Hills: DG5998 Sugarloaf, 350 m

Herbert: DG10858 Orton Bradley Park, 60 m

Akaroa: DG5951 Hinewai; DG11217 Stony Bay Stream, 120 m

***Solenostoma inundatum***

Port Hills: DG10726 Sugarloaf, 400 m

Herbert: DG10898 pro parte Mt Herbert, 840 m

Akaroa: CHR163135 BHM Stony Bay Peak; DG11036 Carews Peak, 660 m;

DG11852 Gap Road, 555 m

***Solenostoma rufiflorum***

Akaroa: DG11745b Lighthouse Road, 630 m

***Symphyogyna hymenophyllum***

Port Hills: DG10743 Omahu Reserve, 360 m

Herbert: CHR527792 HDW head of Purau Bay, 560 m; DG10876 Mt Herbert;

DG10994 Mt Fitzgerald, 760 m

Akaroa: CRH242200 BHM Carews Peak Reserve; CHR16383 MJS6290 Long Bay

Road-Purple Peak Road junction; CHR592441 RJL Hinewai; DG11892 Bossu

Road near Peraki Saddle, 540 m

***Symphyogyna subsimplex***

Akaroa: CHR608271 RJL Hinewai

***Symphyogyna tenuinervis***

Port Hills: DG10733 Omahu Reserve, 360 m

Herbert: CHR267916 BHM Prices Valley; DG11021 Mt Fitzgerald, 500 m

Akaroa: CHR592436 RJL Hinewai; DG9276 Okuti Valley, 250 m

***Symphyogyna undulata***

Herbert: CHR425916 GB Okuti Valley

***Syzygiella colorata* (= *Jamesoniella colorata*)**

Port Hills: CHR528952 HDW Mt Pleasant; DG10759 Cass Peak, 520 m

Herbert: DG10880 Mt Herbert, 800 m; DG10988 Mt Fitzgerald, 740 m;

DG11588a The Monument, 670 m

Akaroa: DG10833 Ellangowan, 630 m; DG10807 Stony Bay Peak, 760 m

***Syzygiella sonderi* (= *Cryptochila grandiflora*)**

Herbert: KWallison H6680 at CHR, TWN Beckett Mt Sinclair ("Tarawera");

DG10905 Mt Herbert, 840 m; DG11002a Mt Fitzgerald, 760 m

***Syzygiella tasmanica* (= *Jamesoniella tasmanica*)**

Akaroa: DG11240 Stony Bay Stream, 450 m

***Targionia hypophylla***

Port Hills: CHR263524 DRG8104 Godley Heads; CHR264943 DRG8576 Redcliffs; DG8265 Rapaki Track, 40 m; CHR264935 MJS Dry Bush, 300 m; DG11210 Vernon Spur, 80 m

Herbert: CHR164813 BHM The Monument, 610 m; CHR164854 BHM Port Levy Valley; CHR105118 BHM Upper Kaituna Valley; CHR240606 BHM Packhorse Track, 360 m

Akaroa: CHR106250 RM8836, Okuti Valley; CHR164050 BHM Stony Bay Peak

***Telaranea herzogii***

Herbert: DG10874b Mt Herbert, 800 m; DG10933 Kaituna Valley, 380 m

Akaroa: CHR592440 RJL Hinewai

***Trichocolea hatcheri***

Port Hills: DG11202 Otahuna, 140 m; DG11848b Omahu Reserve, 171 m

Herbert: DG10937 Kaituna Valley, 380 m

Akaroa: DG10842 Hinewai, 440 m; DG11227 Stony Bay Stream, 210 m; DG754 Nikau Palm Gully, 304 m

***Trichocolea rigida***

Port Hills: DG10739 Omahu Reserve, 360 m

Herbert: CHR240617 BHM Gebbies Pass; DG10871 Mt Herbert, 800 m; DG11557 Mt Herbert, 666 m; DG11613 Herbert Scenic Reserve, 626 m

Akaroa: CHR163124 BHM Montgomery Reserve; CHR592445 RJL Hinewai

***Tricholepidozia lindenbergii* var. *lindenbergii* (= *Telaranea lindenbergii* var. *lindenbergii*)**

Herbert: DG11564a Mt Herbert, 650 m

Akaroa: CHR592423 RJL Hinewai

***Tricholepidozia lindenbergii* var. *papillata* (= *Telaranea lindenbergii* var. *papillata*)**

Akaroa: DG11234a Stony Bay Stream, 210 m

***Tricholepidozia tetradactyla* (= *Telaranea tetradactyla*)**

Herbert: DG10875 Mt Herbert, 800 m

Akaroa: CHR592444 RJL Hinewai; DG11041b Carews Peak, 660 m; DG11234b Stony Bay Stream, 210 m; DG11250 Armstrong Reserve, 600 m

***Telaranea trilobata***

Herbert: DG11622 Herbert Scenic Reserve, 626 m

***Temnoma palmatum***

Herbert: DG10997a Mt Fitzgerald, 760 m

***Temnoma paucisetigerum***

Herbert: DG10865 Mt Herbert, 800 m

***Temnoma quadrifidum***

Herbert: DG11610 Herbert Scenic Reserve, 626 m

***Triandrophyllum subtrifidum***Herbert: DG108868a Mt Herbert, 800 m; DG511554 Mt Herbert, 720 m  
Akaroa: CHR592411 RJL Hinewai; CHR592411 RJL Hinewai; DG10830b  
Ellangowan, 630 m***Tylimanthus tenellus* (including *T. diversifolius*)**Herbert: DG11015a Mt Fitzgerald, 760 m; DG11603 Herbert Scenic Reserve,  
626 mAkaroa: DG11252 Armstrong Reserve, 600 m; DG10806 Stony Bay Peak, 760 m;  
DG11037a Carews Peak, 660 m***Zoopsis argentea* var. *argentea***

Akaroa: DG11231 Stony Bay, 210 m; DG11251b Armstrong Reserve, 600 m

***Zoopsis leitgebiana***

Port Hills: DG10745 Omaha Reserve, 360 m

Herbert: DG10882a Mt Herbert, 800 m; DG10929 Kaituna Valley, 370 m;  
DG11006 Mt Fitzgerald, 760 mAkaroa: DG11244 Armstrong Reserve, 600 m; DG11223 Stony Bay Stream, 210  
m**New records for Hinewai Reserve, Akaroa, since Lewington (2007, 2008)***Aneura orbiculata* – DG11236 Stony Bay Stream*Balantiopsis montana* – DG11224 Stony Bay Stream*Cephaloziella* sp., spinose – DG10813 Stony Bay Peak*Chandonanthus squarrosus* – CHR514721 BHM Stony Bay Peak, 1997*Chiloscyphus helmsianus* – DG9212 South Track*Frullania falciloba* – DG10804 Stony Bay Peak*Heteroscyphus compactus*, Hinewai, West Track, kanuka forest. RJL 15408,  
7/1/05. Det. by RJL.*Isotachis montana* – AJF CHR462543. Common on track banks*Lejeunea oracola* – DG11237a Stony Bay Stream*Lejeunea subelobata* – RJL CHR592421*Paracromastigum* aff. *macrostipum* – DG10815 Stony Bay Peak*Plagiochila circumdentata* – DG10805 Stony Bay Peak*Porella* aff. *viridissima* – DG10843 Boundary Falls

*Schistochila* aff. *repleta* – DG11235 Stony Bay Stream

*Siphonolejeunea nudipes* var. *magnicarinata* – DG11237a Stony Bay Stream

*Siphonolejeunea* sp. (a) – DG5951

*Syzygiella tasmanica* – Stony Bay Stream DG11240

*Targionia hypophylla* – CHR164050 BHM Stony Bay Peak,

*Trichocolea hatcheri* – DG10842 Hinewai Falls

*Tricholepidozia lindenbergii* var. *papillata* – DG11234 Stony Bay Stream

### **Re-identification of names in Lewington (2007)**

*Clasmatocolea inflexispina*: CHR592411 is *Triandrophyllum subtrifidum*

*Frullania aterrima* var. *aterrima*: CHR592414 R JL Hinewai is *F. media*

*Pallavicinia lyellii*: all 3 specimens in CHR from Hinewai are *P. xiphoides*

*Radula buccinifera*: specimen from Hinewai is *R. strangulata*