

LIVERWORTS AND HORNWORTS OF PAREORA ECOLOGICAL REGION

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David Glenny

Allan Herbarium, Landcare Research, Lincoln

This is a list of liverworts and hornworts known from Pareora Ecological Region, South Canterbury (Table 1, p. 14). The list is a very incomplete representation of what is present in the region because of the very limited numbers of collections made there over the years. It is based on herbarium specimens at the Allan Herbarium CHR, including recent collections made during the 2015 John Child Bryophyte and Lichen Workshop.

Introduction

This is the second list of liverworts and hornworts for an ecological region on the drier eastern side of New Zealand. The first was the list of liverworts and

hornworts of Banks Peninsula Ecological Region (Glenny 2013). The present list is based on many fewer collections than that list.

Pareora Ecological Region comprises six ecological districts in South Canterbury: Orari, Fairlie, Geraldine, Hunters, Waimate, and Hakataramea districts (Fig. 1). Altitude ranges from 60 m at Waimate to 1600 m at Mt Nessing. Rainfall ranges from 636 mm at Waimate to



Figure 1 Map of South Canterbury showing Pareora Ecological Region and its six ecological districts.

1160 mm at Peel Forest. Rainfall at Waimate is fairly even throughout the year. The average monthly rainfall in February (50 mm) is the same as for the winter months (e.g. August averages 50 mm rainfall). However, the forests appear to be very dry in summer except in the shaded gullies.

Most bryophyte collections made in the region come from Hunters Hills and Peel Forest (Orari ED) because there are well known scenic reserves in the river gorges issuing from the Hunters Hills. Peel Forest is the largest (770 ha) and most diverse scenic reserve in the region and has the best network of tracks. The least well collected areas, but probably the most interesting bryologically, are the limestone bluffs of Fairlie and Geraldine ecological districts. Very few reserves exist for the limestone areas of Fairlie and Geraldine districts. There is a great need for bryophyte collecting in these limestone areas to find which are the most valuable for bryophytes. To my knowledge, there have been no collections made from Hakataramea Ecological District. The Meyers Pass Road between Pentland Hills and Hakataramea Valley would give good access to the Campbell Hills in this district.

History of collecting

T.W.N. (Naylor) Beckett (Fig. 2) was a Christchurch orchardist at the turn of the last century who made a number of visits to the forest remnants near Waimate and to Peel Forest. He made a total of eight collecting trips to the area, including three to Peel Forest (Fig. 3, p. 5). Peel Forest was not yet a scenic reserve at the time of his visits; it was gazetted in 1909, a year after sawmilling stopped (Department of Conservation 2016a).

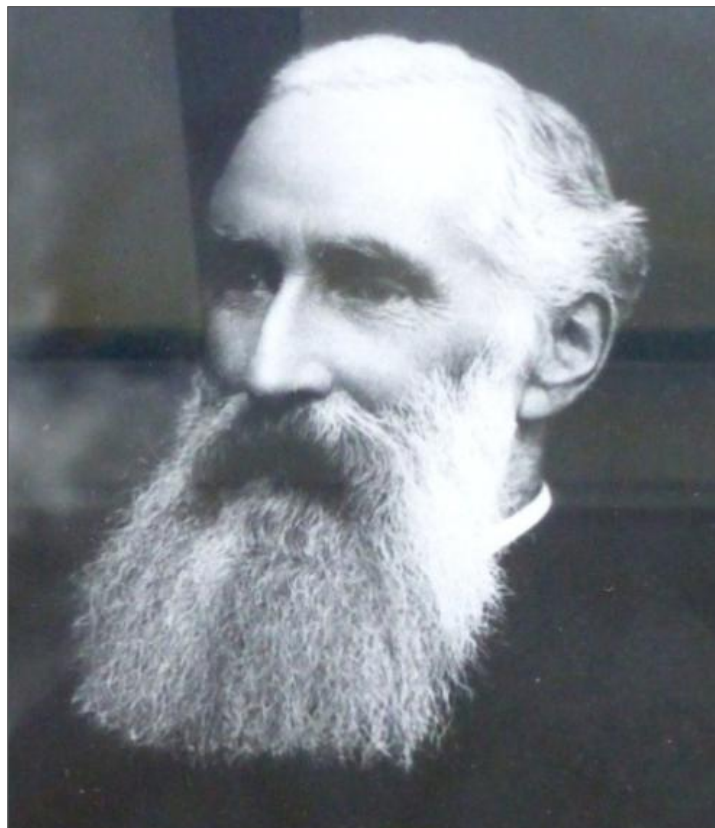


Figure 2 Studio portrait of Naylor Beckett.



Figure 3 Beckett and companion tent-camping at Peel Forest in 1900, possibly on the first day of the new century.

Beckett collected many more mosses than liverworts, and the Beckett Collection housed at the Allan Herbarium has many boxes of New Zealand mosses, but only two of liverworts. Nevertheless, he was an important early collector of liverworts. Beckett sent his collections to European taxonomists. In the case of the liverworts, he sent them mainly to Étienne Levier who passed the collections to Franz Stephani, foremost liverwort taxonomist of the time (Fig. 4). Four of his collections were described as new species by Stephani: *Chiloscyphus beckettianus* Steph., now *Leptoscyphus beckettianus* (Steph.) R.M.Schust. ex J.J.Engel; *Plagiochila circumdentata* Steph., collected at Waimate Bush; *Mastigophora beckettiana* Steph., collected at Waimate Bush, now a synonym of *Triandrophyllum subtrifidum* (Hook.f. & Taylor) Fulford &

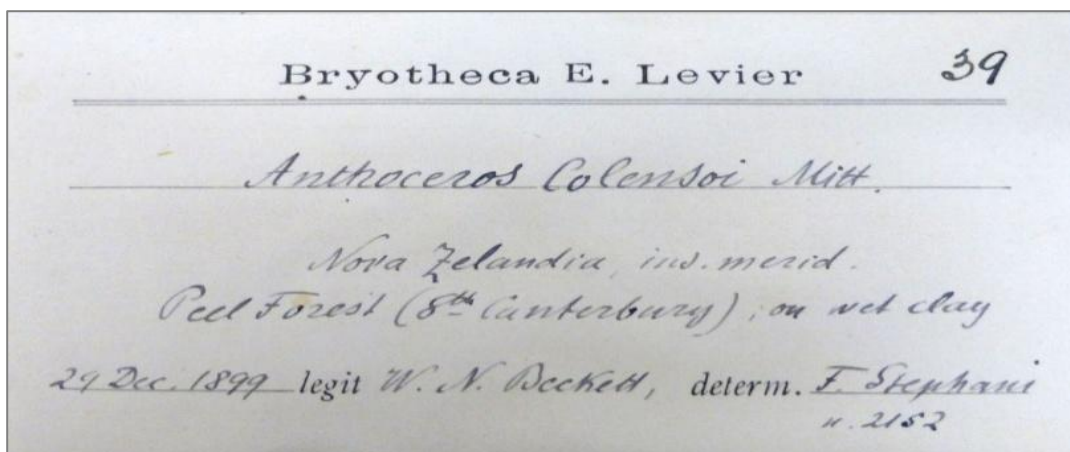


Figure 4 The label of a collection of a hornwort made by Beckett at Peel Forest and sent to Étienne Levier who had it identified by Franz Stephani. The specimen is a *Megaceros* species.

Hatcher; and *Plagiochila beckettiana*, a synonym of *Plagiochila fuscella* (Hook.f. & Taylor) Gottsche, Lindenb. & Nees, also collected at Waimate Bush. The holotypes of these species are in Geneva Herbarium but Beckett retained part of each specimen, which now are isotypes at CHR. Beckett's bryophyte collections are very well curated in that Beckett laid plants out on the mounting sheet so their form can easily be seen, and put additional material into a folded paper packet next to the mounted specimen (Fig. 5).



Figure 5 The isotype of *Plagiochila beckettiana* at CHR showing the beautiful arrangement Beckett made that shows the branching arrangement of the plant.

Beckett's field trips were as follows:

Dry Bush, Waimate: Apr 1892

Waimate: Sept 1888, May 1898, May 1901

Studholme Bush: Sept 1888

Kelceys Bush: 9 May 1901

Peel Forest: 29 Dec 1899, Jan 1900, Jan 1901

Bryony Macmillan collected at Peel Forest for three days on 13–15 April 1968. Later she was invited by the owner of Blue Cliffs Station to collect bryophytes on the station, which she then did on 11 December 1973 and 19 April 1976. At

that time Blue Cliffs Station extended onto the Hunters Hills at the headwaters of the South Branch of the Pareora River. Bryony was asked to do this as a follow-up to H.H. Allan's collections of vascular plants on the station. The 1973 trip was to what was called the "Weaner Run" on the Hunters Hills. In 1976 she collected at what was called "Homestead Bush", a remnant of podocarp-broadleaf forest in a gully.

Max Visch made collections at Peel Forest, on a visit on 9–10 November 1973, as did John Child in April 1973. One of John Child's collections from Peel Forest is the type of *Neolepidozia hodgsoniae* (J.J.Engel & G.L.Merr.) E.D.Cooper.

No further significant collecting was done in the region until the 30th John Child Bryophyte and Lichen Workshop, 9–12 October 2015. This workshop was suggested and organised by Betina Fleming who grew up in Waimate (as well as Sydney) and often visited the Hunters Hills scenic reserves at that time. During the workshop, visits by the group were made to Peel Forest (Fig. 6), Kelceys Bush, Gunns Bush, Mt Nimrod Scenic Reserve, and Craigmore QEII trust covenant (Fig. 7, p. 8). In addition, some attendees of the workshop went up Mt Studholme, and I also visited Mt Studholme in winter 2015 as part of field work to choose fields sites for the workshop. Rodney Lewington and Kelly Frogley provided me with lists of collections they made during the workshop.



Figure 6 *Blechnum colensoi* on a dripping wet cliff downstream from Rata Falls, Peel Forest. *Riccardia filicina* and *R. colensoi* form large mats on this cliff.

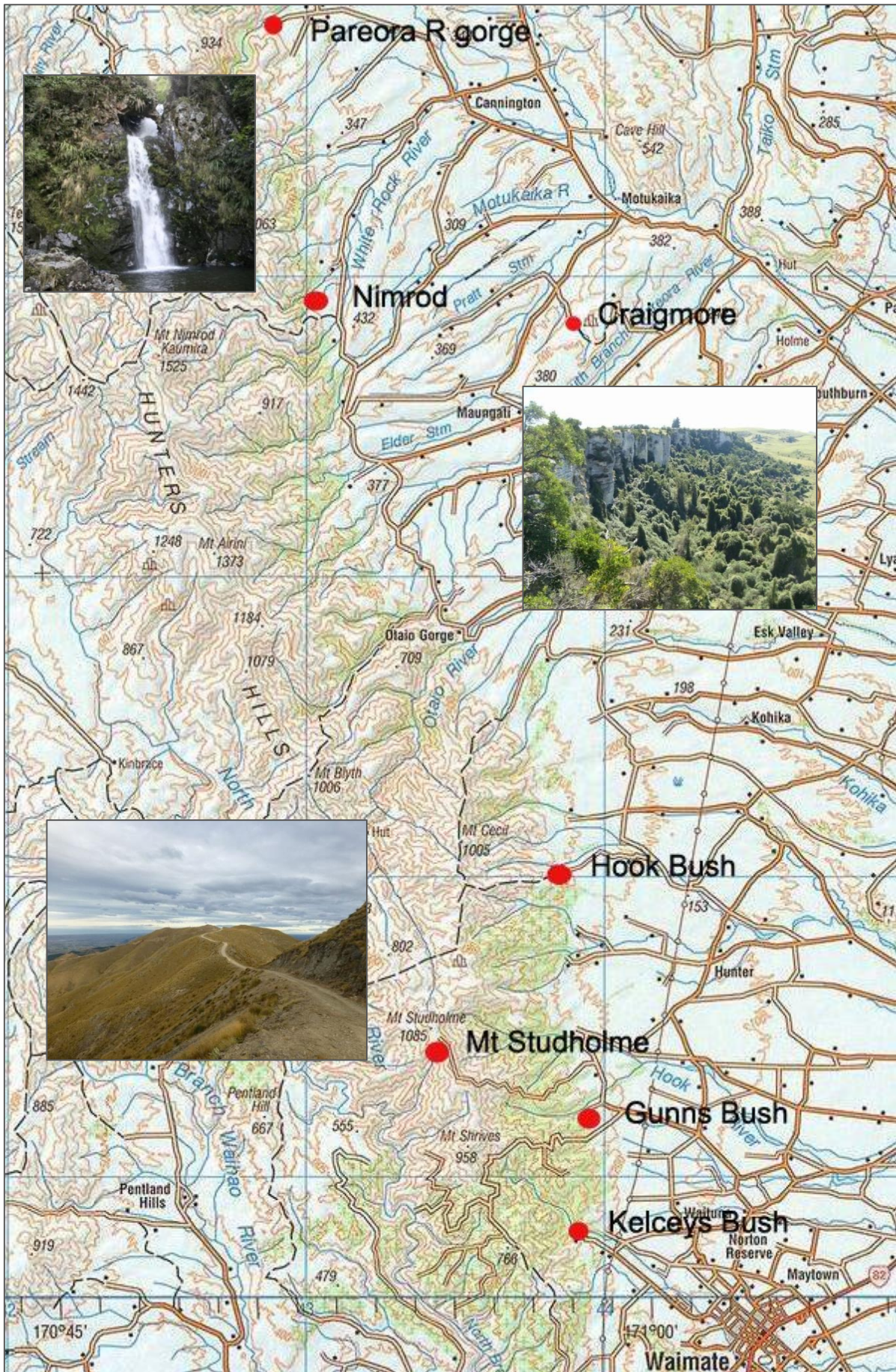


Figure 7 Reserves east of the Hunters Hills visited during the 2015 John Child Workshop. Insert photos are a 15 m high waterfall at the head of the track in Mt Nimrod Scenic Reserve. A number of the small rivers in the scenic reserves of the region have cut deeply into the greywacke bedrock and have waterfalls of this size. [Photo: Sir Rick, Panoramio Image Explorer]; Craigmore QEII trust reserve at Moa Road [Photo: Craigmore Station]; Mt Studholme access road looking southeast from near the Mt Studholme transmitter tower.

In April 2016 Peter Heenan made visits to two reserves, a QEII covenant at the end of Gould Road near Opihi River that has the famous taniwha drawing, and Raincliff Historic Reserve, both in Geraldine ED, and found unusual liverworts on limestone at the two. I accompanied Peter to these two reserves for further collecting in September 2016.

Reserves in the Region

Bushtown Waimate Incorporated (2016) relate that:

“The bush area around Waimate had a sawmilling industry from the early 1860s. ... Where there are now paddocks, over 9000 hectares of black and white pines, totara, ngaio, broadleaf and other trees once stood. From the early 1860s onwards, though, more and more trees went to feed the demand for timber from the fast growing seaports of Timaru and Oamaru. ... By 1877 five sawmills were operating at Waimate”.

As this website narrates, on 12 November 1878 a fire started on the Hunters Hills, probably a burn-off by musterers, which was fanned by a very strong nor'wester and spread down onto the plains at Waimate. The fire lasted for eight days and destroyed thousands of hectares of podocarp–broadwood forest and almost destroyed Waimate township.

By the time Beckett collected at Waimate in 1900, the forests were much reduced. The forest remnants he collected in no longer exist, because of later fires. Studholme Bush, a forest remnant where Beckett collected, was given to the Department of Conservation in 2009 and made a scenic reserve, but in 2010 a fire burnt this area of 154 ha (Otago Daily Times, 22 Dec 2010; Department of Conservation 2016b). In June 2015, there was a fire in forest on Back Line Road, Otaio, the road that runs along the foot of the Hunters Hills (Timaru Herald, 12 June 2015).

Two large areas of the Hunters Hills were made public conservation land in about 2011. The southern area includes Mt Studholme and extends north to Mt Blyth; the northern area includes Mt Nimrod. The Timaru Herald (4 June 2010) reported that:

“Major tenure review proposals which will see more than 4000 hectares of Crown pastoral lease land in the Hunters Hills exchanged into private ownership are near completion. Kaiwarua, Mt Cecil and Mt Studholme stations, which collectively total about 8100 ha, are in the final stages of tenure review.”

The easiest access to the southern area is via the Mt Studholme transmitter tower access road. There appears to be no easy public access to the northern area of the Hunters Hills that is now in public ownership.

Forests of the Region

Most of the forests left in the scenic reserves are lowland hill and valley forests. In warmer sites like Gunns and Kelceys Bush the forest canopy has *Fuchsia excorticata*, *Hoheria angustifolia*, *Griselinia littoralis*, *Aristotelia serrata*, and *Melicytus ramiflorus* as dominants. At Peel Forest, the hillslope forests are composed of a wide variety of species: *Elaeocarpus hookerianus*, *Kunzea robusta*, *Melicytus ramiflorus*, *Griselinia littoralis*, *Pseudopanax arboreus*, *Pittosporum eugenioides*, *Carpodetus serratus*, *Olearia avicenniifolia*, *Metrosideros umbellata*, *Sophora microphylla*, and *Myrsine australis*. In cold gullies, *Fuchsia excorticata* and *Schefflera digitata* are the dominant forest trees. Peel Forest has the largest area of tall podocarp plains forest remaining in Canterbury. The canopy is made up of *Dacrycarpus dacrydioides*, *Prumnopitys spicata*, *Podocarpus totara*, and *Elaeocarpus hookerianus*. It is notable that the hill and gully forests of the region have virtually all of New Zealand's deciduous tree species as co-dominants: *Fuchsia excorticata*, *Hoheria angustifolia*, and *Aristotelia serrata*, as well as semi-deciduous *Sophora microphylla*.

Characteristics of the liverwort and hornwort flora of the Pareora Region

Composition of the flora

A total of 118 liverwort species and four hornwort species are listed here. For comparison, 198 liverworts and 4 hornworts are known from Banks Peninsula (Glenny 2013). As Pareora Ecological Region is larger than Banks Peninsula Ecological Region with a greater altitude range (0–1500 m rather than 0–920 m) and a similar range in annual rainfall (630–1160 mm), this list has probably recorded only about half the species present in the region.

Two families are poorly represented in the region, the *Schistochilaceae* (only 2 species of *Schistochila* and 1 of *Pachyschistochila* are recorded) and *Lepidoziaceae* (12 species in the family are recorded). *Bazzania* is not recorded from the region at all. *Plagiochila* is well represented with 11 species. The list records the common species found in the drier eastern provinces of New Zealand; much more searching is needed to find the rarer species that must be present.

It is noticeable in the forest reserves of the Hunters Hills that a terrestrial liverwort flora is almost completely absent away from streamsides. Another notable feature of these reserves is the abundant epiphytic bryoflora, with festoons of *Papillaria* on the trees, especially in Gunns Bush, but most of this epiphytic bryoflora is composed of mosses; few liverworts compete in this situation.

Undescribed species

Syzygiella 'asperulate' is an undescribed species that I first collected on Mt Studholme. Kelly Frogley found it during the John Child Workshop at the head of Mt Nimrod Scenic Reserve. I have since then collected it on Mt Somers, and Kelly Frogley has found it in a collection from Fiordland. It looks most similar to the very common species *Syzygiella sonderi* (= *Cryptochila grandiflora*), but differs from that species and all other New Zealand species of *Syzygiella* (formerly *Cryptochila*) in having the leaf surfaces asperulate. Male, but not female plants, have been found.

Porella 'atroviridis' is an undescribed species that has a preference for base-rich substrates, but in Pareora ER is known from limestone at Pareora River Reserve and Craigmore, but also at Kelceys Bush on a greywacke boulder. It is known from a number of sites on Banks Peninsula (Glenny 2013) but also on Campbell Island, Chatham Island, in the Catlins, Dunedin, Mt Cass, and near Collingwood. *Porella* 'atraz' is another entity that is widespread in New Zealand and is often found in the same habitats and localities as *P. elegantula* sens. strict.

Weedy species

Marchantia polymorpha, adventive to New Zealand, was collected on the Blue Cliffs Station 'Weaner Run' by Bryony Macmillan in 1973. This species was first recorded in New Zealand at Rotorua in 1932, and is still extending its range in New Zealand. *Lunularia cruciata*, also adventive to New Zealand, was collected by Bryony Macmillan in 1973 at Blue Cliffs Station. The first New Zealand collection was made in Manawatu Gorge in 1929.

Threatened species

Three species found in the region are listed in the current threat listing (de Lange et al. 2015) and are all classified as At Risk, Naturally Uncommon. *Porella pulcherrima* is a species of lowland forest remnants throughout New Zealand whose distribution has undoubtedly been much reduced by loss of

lowland forests. *Lembidium berggrenii* was found at Peel Forest by Rodney Lewington. *Heteroscyphus stoloniferus* is present at the Gould Road QEII covenant, Craigmore QEII covenant, and Raincliff Historic Reserve. Elsewhere it is known from Hunua Falls, Fox River, Chatham Islands, and Aniseed Valley near Nelson, nearly always on limestone. The population at the Gould Road QEII covenant limestone bluffs covers almost half the area of a bluff 60 m long and about 2 m high. In addition, *Heteroscyphus furcistipulus*, present at the Gould Road QEII covenant, is classified as Data Deficient as only six localities are known, nearly all on limestone and scattered throughout New Zealand. Both of these *Heteroscyphus* species are likely to be present at other limestone bluffs in Geraldine ED.

Conservation needs

As mentioned above, there is a need for covenants on the best of the limestone bluff systems of the region, especially where there is remnant forest providing some shade for the bluffs. Bryophyte and lichen survey is needed of these limestone areas.

The history of fire in the region shows the need for effective fire control to stop further losses of small forest remnants.

Selaginella kraussiana was seen in a patch below baches at Blandswood, Peel Forest, and near the footbridge close to the entrance to Mt Nimrod Scenic Reserve. The amounts are small enough to allow eradication, but if left to spread, this will become impossible and *Selaginella* will eventually displace terrestrial bryophytes on stream margins.

Acknowledgements

Bryony Macmillan gave me a list of her collections from Blue Cliffs Station in 1973 and 1976. Rodney Lewington and Kelly Frogley gave me lists of their collections and observations made during the workshop. Betina Fleming suggested Pareora ER as a place for the John Child Bryophyte and Lichen Workshop and organised and ran the workshop with help from me. We stayed at Gunns Christian Camp, and thank the owners of the camp for having us. The Department of Conservation, Hamilton, issued us with a permit to collect during the workshop. David Bielski, farm manager of Craigmore Station gave us permission to visit the QEII covenant at Craigmore, Moa Road. Thanks to Sue Gibb for reviewing this article.

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Table 1: List of liverworts and hornworts known from Pareora Ecological Region

All entries list vouchers, and all vouchers have been seen and their identity checked by me, unless stated otherwise. CHR records of collections post-1980 are searchable at this internet address:

<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/>). Synonyms are given to older, more familiar names that have been displaced by the many changes in genus placement that have resulted from DNA sequencing results over the last 10 years.

Acrobolbus knightii (Mitt.) Briscoe

= *Marsupidium knightii* Mitt.

Kelceys Bush: Lewington 0950Ba

Peel Forest: Glenny 12858

Mt Nimrod Scenic Reserve: Glenny 13005

Acrobolbus perpusillus (Colenso) Briscoe var. *perpusillus*

= *Marsupidium perpusillum* (Colenso) E.A.Hodgs. var. *perpusillum*

Peel Forest: Lewington 1347C

Acrobolbus saccatus (Hook.) Trevis.

= *Tylimanthus saccatus* (Hook.) Mitt.

Peel Forest: Glenny 12932

Acrobolbus tenellus (Taylor) Briscoe var. *tenellus*

= *Tylimanthus tenellus* (Taylor) Mitt. var. *tenellus*

Peel Forest: Glenny 12837; Lewington 1347Aa

Mt Nimrod Scenic Reserve: Glenny 12984

Waimate: Beckett 119, May 1898; Beckett 277, May 1901; Beckett 389, May 1889

Acrobolbus tenellus (Taylor) Mitt. var. *diversifolius* (E.A.Hodgs.) Briscoe

= *Tylimanthus diversifolius* E.A.Hodgs.

Pareora River Reserve: Glenny 12807

Mt Nimrod Scenic Reserve: Frogley, CHR 638183

Acrolophozia pectinata R.M.Schust.

Mt Studholme: Glenny 12903b

Anthoceros laminifer Steph.

Blue Cliffs Station: Macmillan 73/700

Asterella tenera (Mitt.) R.M.Schust.
Peel Forest (Allans Walk): Glenny 12931
Craigmore: Lewington 1042; Frogley ...

Austrolejeunea olgae (R.M.Schust.) R.M.Schust.
Peel Forest: Glenny 12845b
Gunns Bush: Glenny 12801
Kelceys Bush: Glenny 12806
Mt Nimrod Scenic Reserve: Glenny 12977

Balantiopsis diplophylla (Hook.f. & Taylor) Mitt. var. *diplophylla*
Peel Forest: Mrs B. Wormald, 23 Jan 1964
Blue Cliffs Station: Macmillan 73/733, 3200 ft
Kelceys Bush: Lewington 1035

Chandonanthus squarrosus (Hook.) Schiffn.
Mt Studholme: Glenny 12907

Cheilolejeunea albovirens (Hook.f. & Taylor) E.A.Hodgs.
Mt Studholme: Glenny 12908

Chiloscyphus calcareus (Steph.) J.J.Engel & R.M.Schust.
Craigmore: Glenny 13039
Raincliff: P. Heenan, Apr 2016

Chiloscyphus cuspidatus (Nees) J.J.Engel & R.M.Schust.
Mt Nimrod Scenic Reserve: Lewington 1139

Chiloscyphus lentus (Hook.f. & Taylor) J.J.Engel & R.M.Schust.
Waimate: Beckett 253, May 1901
Studholme Bush: Beckett 384, Sept 1888
Mt Nimrod Scenic Reserve: Glenny 12992

Chiloscyphus muricatus (Lehm.) J.J.Engel & R.M.Schust.
Peel Forest (Acland Falls, Rata Falls): Glenny 12923, 13023
Blue Cliffs Station: Macmillan 76/270, 800 ft

Chiloscyphus novae-zelandiae (Lehm. & Lindenb.) J.J.Engel & R.M.Schust.
Peel Forest: Glenny 13031
Kelceys Bush: Glenny 12803

Chiloscyphus parvispineus J.J.Engel
Kelceys Bush: Glenny 13057

Chiloscyphus semiteres (Lehm.) Lem. & Lindenb. var. *semiteres*
Blue Cliffs Station: Macmillan 76/274, 700 ft

Chiloscyphus subporosus var. *inflexifolius* (Steph.) J.J.Engel
Kelceys Bush: Lewington 1008

Chiloscyphus subporosus (Mitt.) J.J.Engel & R.M.Schust. var. *subporosus*

Hooks Bush: Glenny 12909

Kelceys Bush: Glenny 13051

Clasmatocolea inflexispina (Hook.f. & Taylor) J.J.Engel

Mt Studholme: Glenny 12906c

Mt Nimrod Scenic Reserve: seen by K Frogley

Cololejeunea pulchella (Mitt.) R.M.Schust. var. *pulchella*

Peel Forest: Glenny 13030a

Cryptolophocolea mitteniana (Colenso) L.Soderstr. var. *mitteniana*

= *Chiloscyphus mittenianus* var. *mittenianus*

Peel Forest: Glenny 12845a; Glenny 12852

Cryptoplagiochila radiculosa (Mitt.) S.D.F.Patzak, M.A.M.Renner, Schäf.-Werw. & Heinrichs

= *Plagiochila radiculosa* Mitt.

Peel Forest: Glenny 12840

Dinckleria pleurata (Hook.f. & Taylor) Trevis.

Kelceys Bush: Lewington 0921

Diplasiolejeunea plicatiloba (Hook.f. & Taylor) Grolle

Peel Forest: Glenny 12862

Diplophyllum dioicum R.M.Schust.

Mt Studholme: Glenny 12908

Fossombronia pusilla (L.) Nees ?

Peel Forest: M. Renner s.n.

Identity uncertain as the plants are sterile

Frullania aterrима (Hook.f. & Taylor) Hook.f. & Taylor

Kelceys Bush: Lewington 1101B

Mt Studholme: Glenny 12908 (sterile)

Pareora River Scenic Reserve: Lewington 1507

Frullania deplanata Mitt.

Peel Forest: Glenny 12853; Lewington 1327

Frullania falciloba Lehm.

Mount Peel: Beckett 52, 3 Jan 1900 (sterile)

Waimate: Beckett H118, May 1898 (sterile)

Mt Nimrod Scenic Reserve: Glenny 13015

Frullania monocera (Hook.f. & Taylor) Gottsche, Lindenb. & Nees

Peel Forest, Dennistouns Bush: Macmillan 77/254

Blue Cliffs Station, Homestead Bush: Macmillan 76/290

Frullania patula Mitt.

Kelceys Bush: Glenny 13052; Lewington 1032

Mt Nimrod Scenic Reserve: Glenny 12976

Frullania pentapleura Taylor

Peel Forest: Beckett 132, 29 Dec 1899; Glenny 12863

Mt Nimrod Scenic Reserve: Glenny 13013

Gunns Bush: Glenny 12798

Kelceys Bush: Glenny 12863

Frullania probosciphora Taylor

Peel Forest: Macmillan 68/228

Mt Nimrod Scenic Reserve: Glenny 12983

Frullania pycnantha (Hook.f. & Taylor) Gottsche, Lindenb. & Nees

Peel Forest: Visch, 1973, CHR 631140; Macmillan 68/240 (sterile)

Mt Nimrod Scenic Reserve: Glenny 12981

Kelceys Bush: Glenny 12863 p. p., 13058

Waimate: Beckett 262 May 1901; Beckett H120, May 1898

Frullania spinifera Taylor

Peel Forest: Glenny 12821

QEII Trust Covenant at Gould Road near Opihi R: Glenny 13622

Mt Nimrod Scenic Reserve: Lewington 1121

Blue Cliffs Station, Homestead Bush: Macmillan 76/269 (sterile)

Craigmore: Lewington 1057

Kelceys Bush: Glenny 12863 p. p.

Waimate: Beckett 263, May 1901

Frullania squarrosula (Hook.f. & Taylor) Gottsche, Lindenb. & Nees

Peel Forest: Beckett 47, 48, 50, Jan 1900; Visch 1973 CHR 631259; Visch

H1440, 1973; J Child 1973, CHR 425130; Glenny 12829

Heteroscyphus coalitus (Hook.) Schiffn.

Mt Nimrod Scenic Reserve: Lewington 1151b

Waimate: Beckett 117, May 1898

Peel Forest: Glenny 12831; Lewington 1125, 1122a, 1147a, 1202, 1311B, 1347Aa

Heteroscyphus knightii (Steph.) J.J.Engel & R.M.Schust.

Peel Forest: Glenny 12850

Heteroscyphus lingulatus (Colenso) J.J.Engel & R.M.Schust.

= *Heteroscyphus normalis* of NZ authors

Waimate: Beckett 244 pro parte May 1901

Heteroscyphus furcistipulus (E.A.Hodgs.) J.J.Engel & R.M.Schust.
QEII Trust Covenant at Gould Road near Opihi R: Glenny 13627

Heteroscyphus stoloniferus J.J.Engel
Craigmore: Glenny 13044
Raincliff Historic Reserve: P. Heenan, Apr 2016, Glenny 13634
QEII Trust Covenant at Gould Road near Opihi River: Glenny 13624

Heteroscyphus triacanthus (Hook.f. & Lev.) Schiffn. var. *triacanthus*
Peel Forest: Glenny 12859
Craigmore: Glenny 13037

Hygrolembidium australe (Steph.) Grolle
Little Mt Peel: Glenny 12936 pro parte
Mt Studholme: Glenny 12902b

Hymenophyton flabellatum (Labill.) Trevis.
Peel Forest: M. Barr 23 Jan 1964, Macmillan 68/224; Glenny 12835
Mt Nimrod Scenic Reserve: Frogley ...
Blue Cliffs Station: Macmillan 36/666, 1200 ft
Gunns Bush: Glenny 12799
Waimate: Beckett 264, May 1901; Beckett 265A, May 1898; Beckett 235B,
Sept 1888

Hymenophyton leptopodium (Hook.f. & Taylor) A.Evans
Peel Forest: Glenny 12849
Mt Nimrod Scenic Reserve: Lewington 1123
Blue Cliffs Station: Macmillan 76/263, 800 ft

Isotachis lyallii Mitt.
Peel Forest: seen Glenny, track to Emily Falls but not collected

Isotachis montana Colenso
Little Mt Peel: Glenny 12936 pro parte

Kurzia hippuroides (Hook.f. & Taylor) Grolle
Little Mt Peel: Glenny 12936 pro parte

Lejeunea exilis (Reinw., Blume & Nees) Grolle ?
Peel Forest: Glenny 13030b
Identity uncertain as the plants are sterile

Lejeunea flava (Sw.) Nees
Peel Forest: Beckett 131, 2 Jan 1900
Waimate: Beckett 130, May 1898
Beckett 265 from Waimate and 129 from Peel Forest appear to be this also,
but were determined by Stephani as *Lejeunea tumida* (both specimens have 5-
keeled perianths)

Lejeunea oracola M.A.M.Renner ?

Pareora River Scenic Reserve: Lewington 1444B

Identity uncertain

Lejeunea primordialis (Hook.f. & Taylor) Gottsche, Lindenb. & Nees

Peel Forest: Beckett 132, Dec 1899; Glenny 12861

Lejeunea subelobata Carrington & Pearson

Peel Forest: Glenny 13027

Mt Nimrod Scenic Reserve: Glenny 13006

Kelceys Bush: Glenny 12805

Lejeunea primordialis (Hook.f. & Taylor) Gottsche, Lindenb. & Nees

Mt Nimrod Scenic Reserve: Glenny 12982

Lembidium berggrenii Herzog

= *Chloranthesia berggrenii* (Herzog) R.M.Schust.

Peel Forest: Lewington 1544

Lembidium longifolium R.M.Schust.

Little Mt Peel: Glenny 12933b

Lembidium nutans (Hook.f. & Taylor) Mitt.

Peel Forest: Glenny 12834

Little Mt Peel: Glenny 12933a

Lepidolaena clavigera (Hook.) Trevis.

Mt Nimrod Scenic Reserve: Glenny 13009

Lepidolaena taylorii (Gottsche) Trevis.

Peel Forest: Glenny 12922

Kelceys Bush: Glenny 13054

Waimate: Beckett 56, May 1898; Beckett H113, 1888; Beckett 266, May 1901;

Beckett 122, May 1895

Lepidozia concinna Colenso

Mt Studholme: Glenny 12906d

Lepidozia laevifolia (Hook.f. & Taylor) Gottsche, Lindenb. & Nees

Mt Studholme: Glenny 12904

Lepidozia novae-zelandiae Steph.

Waimate: Beckett 93, May 1898

Lepidozia obtusiloba Steph.

Mt Studholme: Glenny 12905

Leptophyllopsis laxa (Mitt.) Hamlin

Peel Forest: Glenny 12834, 12926

Leptoscyphus beckettianus (Steph.) R.M.Schust. & J.J.Engel
Waimate: Beckett 246, lectotype at G, isolectotypes at G and CHR

Lobatiriccardia coronopus ssp. *australis* (R.M.Schust.) Nebel, Preussing, Schäf.-
Verw. & D.Quandt ?

Blue Cliffs Station, Weaner Run: Macmillan 73/410
"bright green thallus with undulate margins"
Identity uncertain due to age of the specimen

Lunularia cruciata (L.) Dumort.
Blue Cliffs Station: Macmillan, 1973
Craigmore: seen by K Frogley
Kelceys Bush: Glenny 12804, 2015

Marchantia berteriana Lehm. & Lindenb.
QEII Trust Covenant at Gould Road near Opihi River: Glenny 13620

Marchantia foliacea Mitt.
Peel Forest: Beckett 32, Jan 1900; Beckett 267, May 1901; Glenny 12836,
12915; Frogley ...
Mt Nimrod Scenic Reserve: Glenny 12987

Marchantia pileata Steph.
South Branch Pareora R.: Macmillan 73/680, 1200 ft

Marchantia polymorpha L.
South Branch Pareora R.: Macmillan 73/681, 1200 ft:

Megaceros denticulatus (Lehm.) Steph.
= *Megaceros pellucidus* (Colenso) E.A.Hodgs.
Peel Forest: Glenny 12826
Mt Nimrod Scenic Reserve: Glenny 13001
Waimate: Beckett 114, Sept 1888

Megaceros leptohymenius (Hook.f. & Taylor) Steph.
Mt Peel: Beckett 38, Dec 1899

Megaceros sp.
Peel Forest: Beckett 39, 1899
Thalli are too old to identify. Spores are verrucose and could be either of the
two species listed above.

Metzgeria flavovirens Colenso
Waimate: Beckett 251, May 1901
Blue Cliffs Station: Macmillan 76/258, 800 ft

Metzgeria furcata (L.) Dumort.

Peel Forest: Beckett 26, Jan 1900 [non *M. leptoneura* as det. by So (2002) p. 618]; Beckett 28, Jan 1900; Glenny 12841

Raincliff Historic Reserve: Glenny 13636

Blue Cliffs Station: Macmillan 73/657, 1200 ft

Mt Nimrod Scenic Reserve: Glenny 12975

Kelceys Bush: Lewington 1042

Waimate: Beckett 116, May 1898

Metzgeria leptoneura Lindb.

Peel Forest: Glenny 12929; Lewington 1311C, 1442

Waimate: Beckett H115, May 1898 [non *M. rigida* as det. by So (2002)]; Beckett 268, May 1901

Microlejeunea latitans (Hook. f. & Taylor) Heinrichs, Schäf.-Verw., Pócs & S. Dong

= *Harpalejeunea latitans* (Hook.f. & Taylor) Grolle

Mt Nimrod Scenic Reserve: Glenny 13014

Waimate: Beckett 133, May 1898

Monoclea forsteri Hook.

Peel Forest (Acland Falls): Glenny 12920

Neolepidozia hodgsoniae (J.J.Engel & G.L.Merr.) E.D.Cooper

= *Telaranea hodgsoniae* J.J.Engel & G.L.Merr.

Peel Forest: J. Child H2084, holotype at F, isotype at CHR

Neolepidozia tetrapila (Hook.f. & Taylor) E.D.Cooper

= *Telaranea tetrapila* (Hook.f. & Taylor) J.J.Engel & G.L.Merr.

Peel Forest: Beckett 82, 2 Jan 1900

Pachyschistochila subhyalina (R.M.Schust.) R.M.Schust.

Mt Studholme: Glenny 12903a

Pallavicinia tenuinervis (Hook.f. & Taylor) Trevis.

= *Symphyogyna tenuinervis* (Hook.f. & Taylor) Grolle

Blue Cliffs Station, Homestead Bush: Macmillan 76/279, 79/280

Pallavicinia xiphoides (Hook.f. & Taylor) Trevis.

Kelceys Bush: Beckett 258, 9 May 1901

Waimate: Beckett s.n., May 1901

Phaeoceros carolineanus (Michx.) Prosk.

Blue Cliffs Station: BH Macmillan 73/699

Plagiochila aculeata (Hook.f. & Taylor) Gottsche, Lindenb. & Nees

Peel Forest: Glenny 12917

Kelceys Bush: Glenny 12802

Plagiochila banksiana Gottsche var. *banksiana*

Peel Forest: Beckett 168, Jan 1900

Studholme Bush: Beckett 167, Sept 1888, "in drip of waterfall"

Waimate: Beckett 248, May 1910

Plagiochila circumdentata Steph. var. *circumdentata*

Pareora River Reserve: Glenny 12809

Mt Nimrod Scenic Reserve: Glenny 12993-5

Waimate: Beckett 254, May 1901, type at G; Beckett May 1898

Plagiochila deltoidea Lindenb. var. *deltoidea*

Peel Forest: Beckett May 1901, Jan 1900

Plagiochila fasciculata Lindenb.

Peel Forest: Glenny 12823; Lewington 1314A

Kelceys Bush: Lewington 0923

Plagiochila fuscella (Hook.f. & Taylor) Taylor & Hook.f. var. *fuscella*

Peel Forest: Glenny 12847

Waimate: Beckett 247, May 1901, type of *P. beckettiana* Steph., holotype at G, isotype at CHR; Beckett 272, May 1901

Plagiochila gigantea Lindenb. var. *gigantea*

Waimate: Beckett 270, May 1901

Plagiochila intertexta Hook.f. & Taylor

Peel Forest: Glenny 12820, 13021

Blue Cliffs Station, Homestead Bush: Macmillan 76/282

Plagiochila rutlandii Steph.

Peel Forest: Lewington 1317

Plagiochila stephensoniana Mitt.

Peel Forest: Beckett 158, Jan 1900; Glenny 12822, 12918

Mt Nimrod Scenic Reserve: Glenny 12990

Gunns Bush: Glenny 12800

Kelceys Bush: Lewington 1142

Waimate: Beckett 245, May 1901; Beckett 157, May 1898

Studholme Bush: Beckett 181, 1888

Plagiochila strombifolia Taylor

Peel Forest (Fern Walk): Glenny 12939

Podomitrium phyllanthus (Hook.) Mitt.

Kelceys Bush: Lewington 0950D

Porella 'atraz'

Peel Forest: Beckett 76, Jan 1900
Blue Cliffs Station: Macmillan 73/635, 1200 ft
Mt Nimrod Scenic Reserve: Glenny 12978

Porella 'atroviridis'

Pareora River Reserve: Glenny 12808
Kelceys Bush: Glenny 13055
Craigmore: Frogley, CHR 638182

Porella elegantula (Mont.) E.A.Hodgs.

Peel Forest: Macmillan 68/223b
Mt Nimrod Scenic Reserve: Lewington 1406
Dry Bush, Waimate: Beckett, Apr 1892

Porella pulcherrima S.Hatt.

Mt Nimrod Scenic Reserve: Glenny 12979

Radula strangulata Hook.f. & Taylor

Peel Forest: Beckett 58, 3 Jan 1900; Beckett 59, 2 Jan 1900; Visch 9 Nov 1973,
Glenny 12919a
Mt Nimrod Scenic Reserve: Glenny 12980
Pareora River Reserve: Glenny 12810
Kelceys Bush: Glenny 13056
Waimate Bush: Beckett 273, 274, May 1901

Riccardia alba (Colenso) E.A.Brown

Craigmore: Glenny 13042

Riccardia colensoi (Steph.) W.Martin

Peel Forest: Glenny 12943

Riccardia filicina (Colenso) E.A.Hodgs.

= *Riccardia australis* of NZ authors, non (Hook.f. & Leveille) E.A. Brown
Peel Forest: Glenny 12844

Schistochila balfouriana (Hook.f. & Taylor) Steph.

Peel Forest: Glenny 12855
Kelceys Bush: Glenny 12864
Studholme Bush: Beckett 393, 394, 1888

Schistochila chlorophylla (Colenso) J.J.Engel & R.M.Schust.

Peel Forest: Glenny 12843

Siphonolejeunea nudipes (Hook.f. & Taylor) Herzog var. *nudipes*

Mt Nimrod Scenic Reserve: Glenny 13002
Kelceys Bush: Glenny 13050

Symphyogyna hymenophyllum (Hook.) Mont. & Nees

Peel Forest: Glenny 12941

Blue Cliffs Station, Homestead Bush: Macmillan 76/278

Waimate: Beckett 24, Sep 1888

Symphyogyna undulata Colenso

Peel Forest: Glenny 12857; Lewington 1225

QEII Trust Covenant at Gould Road near Opihi R: Glenny 13621

Raincliff Historic Reserve: Glenny 13633

Kelceys Bush: Glenny 13062.

Syzygiella colorata (Lehm.) Feldberg, Váňa, Hentschel et Heinrichs

= *Jamesoniella colorata* (Lehm.) Schiffn.

Little Mt Peel: Glenny 12935

Syzygiella sp. 'asperulate'

Mt Studholme: Glenny 12903a, 12906a

Mt Nimrod Scenic Reserve: Frogley, CHR 638184

Telaranea fragilifolia (R.M.Schust.) J.J.Engel & G.L.Sm.

Peel Forest: Glenny 12825

Temnoma paucisetigerum R.M.Schust.

Peel Forest: Glenny 13033

Treubia lacunosa (Colenso) Prosk.

Peel Forest: Glenny 12833, 12942

Triandrophyllum subtrifidum (Hook.f. & Taylor) Fulford & Hatcher var. *subtrifidum*

Waimate: Beckett 256, type of *Mastigophora beckettiana* Steph.

Trichocolea hatcheri E.A.Hodgs.

Peel Forest: Glenny 12854, 12925

Trichocolea rigida R.M.Schust.

Peel Forest: Beckett 136, Jan 1900; Glenny 12832, 12930a; Lewington 1347Ab

Waimate: Beckett 276, May 1901

Tricholepidozia martinii (E.A.Hodgs.) E.D.Cooper

= *Telaranea martinii* (E.A.Hodgs.) R.M.Schust.

Little Mt Peel: Glenny 12934

Tricholepidozia tetradactyla (Hook.f. & Taylor) E.D.Cooper

= *Telaranea tetradactyla* (Hook.f. & Taylor) E.A.Hodgs.

Mt Peel: Beckett 79, 2 Jan 1900, Glenny 12938

Zoopsis leitgebiana (Carrington & Pearson) Bastow

Peel Forest: Glenny 12947