

several kinds of algae (two reds and three greens) that are ubiquitous around this part of the Manukau. A single toetoe (*Cortaderia splendens*) flourishes here at a convenient level for its distinguishing features to be readily appreciated, unlike a lone *Blechnum* high on the cliff that could possibly have been *B. triangularifolium*, the Green Bay blechnum. Mountain flax (*Phormium cookianum*) is plentiful, but renga lily (*Arthropodium cirratum*) is absent.

At the top of the upward climb on the south side of the valley we saw a couple of trackside colonies of *Pterostylis graminea*, and then, under open old manuka, extensive growths of our finest-stemmed leafless sedge, *Tetraria capillaris*.

We moved on to lunch at the similarly situated coastal forest on the eastern side of Blockhouse Bay (Avondale South Domain Reserve). Large pines and wattles form its canopy, but the wattles at least are being "managed" - may pohutukawa grow on their stumps. (It could be conceded that these exotics have some historic interest, since they are likely to be the offspring of plantings of 19th C. businessman Thomas Gittos, who established a tannery at the foot of the stream running into Flounder Bay). The understory contains no regenerating native forest-canopy trees apart from a few totara and tanekaha; fortunately, acmena seems to be absent.

Along the top of the coastal cliffs are a good number of large pohutukawa, and a scattering of smallish to medium-sized towhai (*Weinmannia silvicola*). The ecological status of towhai here parallels that of *Nothofagus truncata* on the North Shore: both populations consist mostly of ageing trees confined to the most favourable (cool) sites, and regeneration is virtually absent (one towhai seedling, on a silver tree fern base, was noted).

A rather exposed headland on the east side of Sandy Bay has a good piece of coastal scrub, containing stout treelets of *Dracophyllum sinclairii* and manuka, and also bracken, *Schoenus tendo*, plenty of *Hebe macrocarpa* (but no *H. stricta*), and a dozen or so small plants (including seedlings) of *Pimelea longifolia*. The latter was recently found further west in a similar situation at Kauri Point, Laingholm, and also opposite on the Awhitu Peninsula.

Field trip participants: Tricia Aspin, Enid Asquith, Paul Asquith, Colleen Brewer, Warren Brewer, Jan Butcher, Lisa Clapperton, Brian Cumber, Pam Dale, Rhys Gardner (leader), Sharen Graham, Leslie Haines, Peter Hutton, Barrie McLeay, Christine Major, John Millett, Helen Preston Jones, Juliet Richmond, Pat Seyb, Alison Wesley, Mike Wilcox, Maureen Young.

Mt Rowe: a chunk of south Westland in the Coromandel

Matt Renner

Mt Rowe is the domed summit of the small plateau immediately North-East of Table mountain which is a continuation of that rock formation. Like Table Mountain the plateau has reasonably flat relief (being part of an old eroded rhyolitic crater lake), and at 720-760 m, similar climate. The flat relief and high precipitation (probably upwards of 2000 mm) have contributed to the accumulation of the same boggy soils as found on Table Mountain. These soils are dramatically different from the well drained, relatively fertile colluvial soils found on sloped sites in the Coromandel, and they support vegetation which is also dramatically different from surrounding sites. The forest on Mt Rowe is dominated by *Lepidothamnus intermedius*, with *Ixerba brexioides*, *Weinmannia silvicola*, *Metrosideros umbellata*, *Dacrydium cupressinum*, *Phyllocladus* aff. *alpinus*. There are a few mature *Agathis australis* present as emergents. The understory is dominated by *Epacris sinclairii* on raised sites, and *Gahnia procera* and *Gahnia xanthocarpa* in depressions. The forest is relatively open such that a thick layer *Gahnia* often develops in parts. Within the context of the Coromandel range this community is relatively uncommon, and around the Kauarenga Valley is restricted to the summits of Table Mountain, Mt Rowe, and another site at the

head of the valley near the Pinnacles hut. Mt Rowe is one of the most "bryogeographically" surprising places I have ever wandered into.

In this article I report five new northern limits, one putative southern limit, an additional locality for ten species with restricted distributions in the upper North Island, and the finding of three totally new species of liverwort (not formally described here) on Mt Rowe. I provide a species list for liverworts with voucher numbers (Appendix). Vouchers are held at the Auckland Herbarium (AK).

New Northern Limits

Megalembidium insulanum

At up to 30 mm high, *Megalembidium insulanum* is the largest member of the Lepidoziaceae subfamily Lembidioideae (*sensu* Schuster & Engel 1987). *Megalembidium* is monotypic and is endemic to New Zealand. *Megalembidium* was placed into its own subfamily by Engel & Braggins (2005), however this placement has not been substantiated (Heslewood & Brown, 2007). The distribution of *Megalembidium* was given as South Island only by Engel & Braggins (2005). This species has a scattered distribution along

the West Coast of the South Island, but where it occurs it is usually abundant. On Mt Rowe *Megalembidium* is common on raised hummocks and on the tops of trackside banks, both microsites this species occupies through the remainder of its range. The occurrence of this species at Mt Rowe is the first reported North Island locality, and extends its known distribution north by about 800 km.

Clandarium xiphophyllum

This species has not been widely collected in the South Island, and in the North Island is known from Mt Ruapehu only. It has also been found recently on the Chatham Islands, admixed with *Archeophylla schusteri* (P.J. de Lange *pers. comm.*).

Acrobolbus cinerescens

This is a common epiphytic species in montane forests throughout the South Island. It is also known from Mt Ruapehu in the upper half of the North Island.

Acrobolbus lophocoleoides

Acrochila biserialis

These two liverworts are widespread in the South Island but to date are known from Ruapehu, Taranaki and Te Aroha mountains in the upper North Island.

North Island Southern Limit

Acromastigum marginatum.

This species is currently known from three localities in the upper North Island, Waipoua, Puketi and Little Barrier, and on the west coast of the South Island (D. Glenny *pers. comm.*). At these sites the plants occur in reasonable abundance and form conspicuous glaucous mats on tree trunks and large rotting logs. Mt Rowe is apparently the most southern locality for this putatively endemic species in the North Island. There is no reason why this species shouldn't occur inbetween these two locations.

Additional locality for species with scattered distributions

Brevianthus flavus

This species was recorded for New Zealand by (Glenny 2000), and had been considered a Tasmanian endemic prior his finding it at Blackball on the West Coast. Since 2000 this species has been collected at a number of locations in central and northern Westland, and also at Tarahoka clearing in Waipoua forest. Mt Rowe is the second North Island locality for this species.

Acromastigum anisostomum

Acromastigum cavifolium

Bazzania monolinervis

Herbertus alpinus

Marsupidium setulosum

Radula tasmanica

These species are all common in forests of the South Island's west coast, but become increasingly restricted in distribution as you move up the North Island. Basically these species grow in cool wet forests, and the further north you go the higher up hills they grow.

Kurzia trilobata

Lembidium longifolium.

Both these species have their type localities on Little Barrier Island. *Lembidium longifolium* is now known from four or five localities on the North Island mainland, all of which were potentially black petrel nesting sites (Renner & Braggins 2003). This species has also been collected twice on the Chatham Islands – again in the vicinity of old or active petrel burrows (P. J. de Lange *pers. comm.*).

Totally new species

Microlejeunea sp. nov.

This species belongs to an informal group characterised by their glaucous colour, the presence of a group of four sub-ocellate cells at the base of the leaf lobe, lobules with a falcate apical tooth, and capsules with elaters in a [1+2, 2+2] conformation. Three species belonging to this group occur in Australia, where they grow in tropical montane forests in North Queensland. This species differs from its Australian counterparts in its yellow-grey colour and large imbricate underleaves. I don't know of anything else like this in New Zealand. This species was taken to be *Harpalejeunea* in the field.

Radula aff. *fauciloba*

This species is similar to *R. fauciloba*, but differs in its narrower lobules, smaller size and low papillae over the entire surface of the leaf lobe, rather than restricted to the keel. This brings to five the number of species in the *R. fauciloba* aggregate in New Zealand and, contrary to (So, 2005), *R. retroflexa* is not one of them.

Riccardia sp. nov.

This species is utterly mind boggling. It is distinctive in its papillose, subcylindrical thalli, wherein the papillae are formed by individual cells. It looks like Danish Salami, except really small and green. There is nothing else like this in New Zealand, and its nearest relatives are in Chile (E.A. Brown *pers. comm.*). This species will be described as new shortly.

Conclusion

The collections described above, and listed in full below provide fairly strong evidence for the fact that New Zealand's liverwort flora is still undercollected, understudied, and is poorly known as a result. The upcoming flora of New Zealand treatment will go a long way to remedying this. However, the habit of bryophyte collectors to date has been to target a select suite of favoured or conspicuous localities, which are typically readily accessible by vehicle. This

results in intensive collecting at relatively few sites. Finding unusual, and highly distinctive plants such as a new species of *Riccardia*, which was the subject of a thorough revision in between 1987 and 1989 (Brown & Braggins 1989), suggests that New Zealand's liverwort flora may display some degree of cryptic geographical variation that can be overlooked by this approach to collecting. When coupled with the historically geographically restricted nature of field activities, this will result in significant gaps in our knowledge of New Zealand's liverwort flora, in terms of its composition and distribution. This may be the case, as Mt Rowe suggests. This has more than esoteric implications. The current state of knowledge of New Zealand's

liverwort flora may be in most cases inadequate for assessing which are and which are not threatened species. A qualitative focus on occurrence achieves two things, firstly it overestimates the number of threatened taxa and secondly it overlooks declines occurring across a species range. Our current state of knowledge, coupled with the criteria for listing threatened plants (Hitchmough 2002), has likely produced an ultraconservative estimate of the state of threat to New Zealand's liverwort flora, but one that at the same time does not necessarily incorporate those species that are under threat.

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Appendix: Liverworts found on Mt Rowe.

<i>Acrobolbus cinerascens</i>	AK 299726	<i>Frullania</i>	AK 299903
<i>A. lophocoleoides</i>	AK 299920	<i>Geocalyx caledonicus</i>	AK 299751
<i>Acrochila biserialis</i>	AK 298560	<i>Goelbeliella cornigera</i>	AK 298562
<i>Acromastigum anisostomum</i>	AK 299737	<i>Herbertus alpina</i>	AK 298556
<i>A. cavifolium</i>	AK 300167	<i>Heteroscyphus billiardierei</i>	AK 299733
<i>A. colensoanum</i>	AK 298526	<i>H. cymbaliferus</i>	AK 298588
<i>A. marginatum</i>	AK 298540	<i>H. menziesii</i>	AK 298562
<i>Adelanthus bisetulus</i>	AK 299736	<i>H. sp. nov.</i>	AK 298528
<i>Anastrophyllum schismoides</i>	AK 298591	<i>Isotachis minima</i>	AK 298524
<i>Bazzania adnexa</i>	AK 298590	<i>Kurzia compacta</i>	AK 300165
<i>B. monolinervis</i>	AK 299722	<i>K. hippuroides</i>	AK 298520
<i>B. nova</i>	AK 298543	<i>K. trilobata</i>	AK 300175
<i>B. novae-zelandiae</i>	AK 298569	<i>Lembidium longifolium</i>	AK 298520
<i>B. tayloriana</i>	AK 299735	<i>Lepicolea attenuata</i>	AK 298534
<i>Brevianthus flavus</i>	AK 298545	<i>Lepidolaena clavigera</i>	AK 298573
<i>Cephaloziella</i>	AK 299721	<i>Lepidozia digitata</i>	AK 298541
<i>Clandarium xiphophyllum</i>	AK 298535	<i>L. kirkii</i>	AK 298564
<i>Colura pulcherrima</i> var. <i>bartlettii</i>	no voucher	<i>L. laevifolia</i> agg.	AK 300166
<i>Drepanolejeunea</i> aff. <i>aucklandica</i>	AK 298563	<i>L. microphylla</i>	AK 299753
<i>Frullania</i>	AK 299762	<i>L. spinosissima</i>	AK 298585
<i>Frullania</i>	AK 298563	<i>L. aff. microphylla</i>	AK 300171
<i>Frullania</i>	AK 299759	<i>Marsupidium epiphytum</i>	AK 299725
<i>Frullania</i>	AK 299760	<i>M. setulosum</i>	AK 299919
<i>Frullania</i>	AK 299761	<i>Mastigolejeunea anguiformis</i>	AK 298559
<i>Frullania</i>	AK 299763	<i>Megalembidium insulanum</i>	AK 298549

<i>Metalejeunea cucullata</i>	AK 298565	<i>R. crassa</i>	AK 299752
<i>Microlejeunea</i> sp. nov.	AK 300169	<i>R. furtiva</i>	AK 298545
<i>Pallavicinia lyelli</i>	AK 299714	<i>R. sp. nov.</i>	AK 298538
<i>Paracromastigum drucei</i>	AK 298524	<i>Schistochila appendiculata</i>	AK 299917
<i>Paraschistochila tuloides</i>	AK 299718	<i>S. glaucescens</i>	AK 298586
<i>Plagiochila gigantea</i>	AK 299730	<i>S. nobilis</i>	AK 299750
<i>P. lyallii</i>	AK 299724	<i>Symphyogyna hymenophyllum</i>	AK 299916
<i>P. pleurata</i>	AK 298572	<i>Telaranea gibbsiana</i>	AK 299906
<i>Radula aneurysmalis</i>	AK 300169	<i>T. perfragilis</i>	AK 298539
<i>R. dentifolia</i>	AK 298532	<i>T. praenitens</i>	AK 299716
<i>R. grandis</i>	AK 298561	<i>Temnoma pulchellum</i>	AK 298568
<i>R. multiaumentula</i>	AK 298557	<i>Tylimanthus tenellus</i>	AK 299728
<i>R. pseudoscripta</i>	AK 299758	<i>Zoopsidella caledonica</i>	AK 299731
<i>R. tasmanica</i>	AK 298531	<i>Zoopsis argentea</i>	AK 299734
<i>R. aff. fauciloba</i>	AK 299908	<i>Z. ceratophylla</i>	AK 298526
<i>Riccardia aequicellularis</i>	AK 300170	<i>Z. setulosa</i>	AK 298547

Populations of naturalised Oyster Bay pine (*Callitris rhomboidea*) at Oratia and Huia, Waitakere Ranges, Auckland

Mike Wilcox

The Australian conifer Oyster Bay pine (*Callitris rhomboidea* R.Br. ex Rich. & A.Rich. Cupressaceae) grows over an area of approximately 2 ha on a property at 151 Parker Road, Oratia, owned by Leo Rapp. The population has been in this area for many years (Allan 1935, 1940). It comprises numerous large trees up to 12 m in height and 60 cm in diameter, and hundreds of pole and sapling trees. The Oyster Bay pine — also known as Port Jackson pine (Harden 1990) — grows here in mixture with kanuka (*Kunzea ericoides*), with associated lemonwood (*Pittosporum eugenioides*), rewarewa (*Knightia excelsa*), mamaku (*Cyathea medullaris*), and mahoe (*Melicactus ramiflorus*), and exhibits a remarkable capacity to regenerate itself more or less continuously. The older trees have a distinct propensity to lean or fall over — a result of shallow root systems. Mr Rapp has observed this in many places. He reports that once dry, the wood is excellent firewood. The foliage of the trees is healthy, and a striking feature of the trees both old and young is the abundant production of cones in clusters on the branches and stems. The cones are very persistent.

As well as Leo Rapp's trees there are further naturalised populations in or near Parker Road. There are several trees on the property of Geoff and Bev Davidson, and on the property owned by Oratia Church Trust, corner of Parker Road and West Coast Road. The church property is gumland vegetation, and was visited by the NZ Plant Conservation Network group in November 2006 during the Cheeseman Symposium. There were numerous mature *Callitris rhomboidea* trees scattered through the block, but most of these have been felled or ring-barked over the last six years (Geoff Davidson, pers. comm.). The resultant opening up and disturbance to the site has

triggered mass regeneration of *Callitris* seedlings (Fig. 1), many of which themselves already carry cones after just 3 or 4 years.



Fig. 1. *Callitris rhomboidea* seedlings, Oratia Church. Photo: Mike Wilcox, 6 Aug 2007

Another population of Oyster Bay pine occurs in the Waitakere Ecological District at Huia approximately 350 m along the Parau Track from the swing bridge across the Huia Stream (and 40 m along from the Farley Track branch-off). Here there c. 10 large adult trees, the biggest c. 15 m tall and 60 cm in diameter. Unlike the Oratia population (Fig. 2), there are no extensive stands of poles and saplings, though there is one canopy gap with several seedlings and saplings. The Oyster Bay pines grow here in admixture with kanuka, kauri, rimu, rewarewa, tanekaha (*Phyllocladus trichomanoides*), mamangi (*Coprosma arborea*), lancewood (*Pseudopanax crassifolius*) and five-finger (*P. arboreus*), and was reported from this locality by Wood (1951).