



BOTANICAL SOCIETY

OF OTAGO

Leratiomyces erythrocephalus



Newsletter Number 80

February 2017

BSO Meetings and Field Trips

Saturday 4th February 8.00 am Field Trip to Herbert Forest. One of the positive aspects to come out of plantation forestry has been the setting aside of areas of native vegetation that might otherwise have missed out on protection. Blakely Pacific's forestry operations at Herbert encircle a number of such areas. Subject to forestry operations this field trip will take us into one of several examples of dry, coastal podocarp forest. Leaving early and returning late afternoon. Further details on our website nearer to the time. Contact John Steel 021 2133 170, email john.steel@otago.ac.nz

Wed 22nd February 2017 5.20 pm Botanical gems of Stewart Island/Rakiura. Speaker: John Barkla, Department of Conservation. Over the past year John and Marilyn have undertaken a couple of long tramping trips through Stewart Island/Rakiura reacquainting themselves with the island's amazing biodiversity they first experienced over 25 years ago. John will talk about the special plants and ecosystems for which Stewart Island/Rakiura is now the national stronghold.

Wednesday 8th March 5.20 pm Breaking Down Decomposition: Using Teabags to Investigate Decomposition Rates along Aspect and Elevation Gradients. Speaker: Dr. Barbara J. Anderson, Ecologist and Research Scientist, Landcare Research. Barbara and her colleagues use the newly developed Tea Bag Index (TBI) to investigate the relative effects of microclimate on decomposition rate along aspect and elevation gradients on Mt. Cardrona, Central Otago, from 500m to 1936m. The Teabag Index exploits the difference in relative decomposability of Green Tea and Red Tea to construct a decomposition curve over a single three month time period. This allows them to estimate both the decomposition rate and the litter stabilisation factor. Taking advantage of the standardised and cost-effective nature of the Teabag Index they were able to investigate both the fine-scale and whole mountain differences in decomposition rate.

Saturday 11th March 8.30 am Field Trip to Mount Watkin/Hikaroroa. Mount Watkin is a 616 metre peak located north-west of Waikouaiti. It is a volcanic peak surrounded by a schist landscape with fine views of Karitane and Waikouaiti estuaries. The DCC's 650-hectare Mt Watkin / Hikaroroa Reserve is regarded one of the best remaining examples of dry coastal forest in Otago. On this trip we will explore the lower slopes of the reserve. Foul weather back up date Sunday 12th March. Meet at Botany Department car park 8.30am. Return 5pm. Contact Robyn Bridges, (03) 472 7330, email robyn.j.bridges@gmail.com

Saturday 8th April 8.00 am Field trip to Mt Bengier. The summit of Mt Bengier is at 1167 metres and overlooks the Clutha Valley above Roxburgh and Ettrick. The area is mostly high tussock grassland plateau. Access is from State Highway 8 north of Ettrick. Turn onto Dalmuir Road then Mt Bengier Road which will take you to the block boundary at about 850 metres. Access from that point is via a 4WD track. Meet at the Botany Department car park at 8.00 am. Contact David Lyttle, (03) 454 5470.

Wednesday 12th April 5.20 pm The Himalaya: history of a habitat. Speaker: Elizabeth Whitcombe. Elizabeth is a physician, historian and a skilled, knowledgeable gardener, who has travelled widely in India and has a lifelong interest in the Himalaya and its flora. This talk will outline the geomorphological history and climate of the region and how these factors influence the flora along the east-west axis of the Himalayan mountain chain.

Wednesday 10th May 5.20 pm BSO AGM and Photographic Competition. A popular and eagerly anticipated event for anyone interested in botanical photography. Learn what makes a good photograph and how to improve your photographic skills from our panel of expert judges. The best photographs may be chosen for the BSO Calendar so this is your opportunity to have one month of fame. Start organising your entries now and don't wait until the last minute.

Saturday 20th May 8.00 am Field Trip to Dolamore Park, Gore. Dolamore Park is just west of Gore on the slopes of the Hokonui Hills. The park has multiple trails through 95 hectares of native podocarp forest to explore with the option of heading to tussock tops and stunning views for the super keen. This trip involves 2 hours driving each way (approx. 330 km). Depart Botany car park at 8am return 6pm. Contact Gretchen Brownstein, brownsteing@landcareresearch.co.nz

Saturday 10th June 9.00 am Field Trip to Lower Taieri Gorge. Bad weather caused the postponement of this trip last year so we'll give it another try this year. The 8 km long Taieri River and Millennium track follows the true right of the lower Taieri River from the end of Taieri Ferry Road near Henley, through to Taieri Mouth. It traverses interesting dry hillslope broadleaved forest with many rare species including fragrant tree daisy, fierce lancewood, native verbena, wind grass and *Coprosma obconica*. We'll leave a car at Taieri Mouth so that drivers can be returned to their vehicles. Depart Botany car park at 9 am return mid afternoon. Contact John Barkla, (03) 476 3686.

Wednesday 14th June 5.20 pm Lichens and luscious berries of Sweden, Finland and Lapland. Allison Knight will talk about her Scandinavian summer – adventure kayaking around the thousands of islands in the St Ana archipelago, attending IAL8 International Lichen Symposium in Helsinki and a fabulous field trip to Lapland.

Meeting details: Talks are usually on Wednesday evening starting at 5.20 pm with drinks and nibbles (gold coin donation), unless otherwise advertised. Venue is the Zoology Benham Building, 346 Great King Street, behind the Zoology car park by the old Captain Cook Hotel. Please use the main entrance of the Benham Building to enter and go to the Benham Seminar Room, Room 215, located on the second floor. Please be prompt as we have to hold the door open. Items of botanical interest for our buy, sell and share table are always appreciated. When enough people are feeling sociable we go to dinner afterwards: everyone is welcome to join in. The talks usually finish around 6.30 pm: keen discussion might continue till 7 pm.

Field trip details: Field trips leave from Botany car park 464 Great King Street unless otherwise advertised. Meet there to car pool (10c/km/passenger to be paid to the driver, please). Please contact the trip leader before Friday for trips with special transport and by Wednesday for full weekend trips. A hand lens and field guides always add to the interest. It is the responsibility of each person to stay in contact with the group and to bring sufficient food, drink and outdoor gear to cope with changeable weather conditions. Bring appropriate personal medication, including anti-histamine for allergies. Note trip guidelines on the BSO web site:

<http://www.otago.ac.nz/botany/bso>

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Chairman's Notes

David Lyttle

The BSO ended 2016 on a high note with a weekend field trip to Mavora Lakes. The trip was well attended and despite a mixed forecast, the weather was kind to us so we were able to botanise on both days. It is interesting to reflect that we saw a selection of plants growing amongst the *Chionochloa* tussocks not too dissimilar to some of the familiar weeds of our urban gardens: buttercups; *Ranunculus multiscapus*, *Ranunculus glabrifolius*, *Ranunculus ternatifolius*, daisies; *Celmisia gracilentia*, *Brachyglottis bellidioides*, docks; *Rumex flexuosus* and dandelions; *Taraxacum magellanicum*, *Sonchus novae-zelandiae*. The latter plant is a rare, dryland endemic that was until recently placed in its own genus *Kirkianella*. It was voted second in the 2016 NZPCN Favourite New Zealand Native Plant Competition. Seeing it in its natural environment is a reminder of the unique nature of the plants that have evolved here and how our native flora is now being increasingly lost in landscapes modified by agricultural and urban development.

It is often a challenge identifying plants in the field. Definitive taxonomic identification depends on the careful examination of specimens for characters often visible only with a hand lens or under a dissecting microscope with reference to a Flora or scientific papers and using a formal key constructed by a taxonomic botanist who has spent a great deal of time sifting through herbarium specimens and reconciling them (or not) with the descriptions published in the existing botanical literature. Scoring characters of taxonomic value requires a lot of time and patience and usually the protagonist's efforts are focussed on one or few groups of plants. In recent times established taxonomies for many genera have been challenged by DNA sequence analysis by replacing the morphological criteria used to

define genera in traditional taxonomic treatments with similarities based on selected DNA sequences and the construction of phylogenetic trees to show the evolutionary relatedness of different species. Besides nomenclatural instability, this approach has produced many surprises. One recent proposal merges the New Zealand genera of *Schizeilema* and *Stilbocarpa* with the predominantly South American genus of *Azorella*.

So where does this leave the non-specialist botanical observer and what contributions can they make to botanical science? Those of us who belong to the BSO fall mainly into this category though we may describe ourselves as field botanists, citizen scientists, gardeners or botanical photographers. "Trust not authority; pay no heed to the books but go to the plants themselves" sage advice attributed to Mr R. Brown given by Dr Leonard Cockayne at the very beginning of his classic book "New Zealand Plants and their Story".

For myself every botanical excursion is an adventure even to familiar places and more often than not I find something that is new to me.



Sonchus novae-zelandiae at Mavora Lakes
(Photo: Kate Caldwell)

The first step in identifying a plant is to look at where it is growing. For example *Gentianella amabilis*, a common plant found in the upland

alpine bogs of Otago, was for a long time not considered to be sufficiently distinct on morphological grounds to be regarded as “good” species separable from *Gentianella bellidifolia* despite the two plants having very different habitat preferences. In other cases species are distinguished on fairly arbitrary characters when in fact they have the same ecological role.

The second question is “how many different buttercups/celmisias/snow hebes are growing in this place and what are they doing”? Inevitably each will have different habitat preferences and equally inevitably some populations will merge (hybridise?) as every location is a complex mosaic of habitats.

The simplest most practical way of making an observation now with the availability of good digital cameras is to create a photographic record rather than collect a herbarium specimen. This has the advantage in that a collecting permit is not required. A good close up shot magnified on screen can show details of a plant usually visible only with a hand lens. A photo of the whole plant and its habitat is helpful as is a record of its location, elevation and any other relevant field details as would be the case with a herbarium specimen.

Once you have taken the trouble to make an observation the question is what to do with it. Thanks to the efforts of some hard-working and dedicated people we now have the New Zealand NatureWatch platform where anyone can post their natural history observations. Careful observation and good quality data make Nature Watch a valuable resource for the scientific community and an increasing number of specialist botanists are beginning to realise its value. I have received a number of enquiries lately about postings I have made that have taken me down some unfamiliar paths. An observation of a rust fungus growing on *Abrotanella caespitosa* from the Lammermoor Range identified as *Aecidium monocystis* was

the third record of this organism in New Zealand.

If you have taken the trouble to read these notes and got this far, hopefully you will be encouraged to extend your botanical skills and take advantage of the NatureWatch web platform by making your own contributions to it. This will add to the knowledge and appreciation of our marvellous New Zealand flora.

www.naturewatch.org.nz

Secretary's Notes

Allison Knight

Such is the lead time for the newsletter that the peak field season for summer is upon us now and it will be nearly over by the time you read this. I hope you made the most of it, and took some good photos for the Photo Competition and the 2018 Calendar.

The last field trip of 2017, with 2 nights camping at the beautiful Mavora Lakes was a roaring success despite the dubious weather forecast. Perhaps people were enticed by David Lyttle's enticing photograph. That's another good idea to send out before field trips and talks and a good resolution for improving our profile for 2017 – if only we weren't all so busy. It's very gratifying to see all the younger people joining in and adding new vigour.

I'll certainly be busy over the summer collecting lichens for all sorts of exciting new projects. Collecting is usually the best part, though if there are hordes of sandflies and mosquitoes on the West Coast it may be more of a mission of dedication. Well worth it though, to add to our understanding of New Zealand's rich lichen flora, and especially gratifying when a new species is discovered. 2016 was a bumper year in that respect. There's a lot of processing and

identification to be done, and a long lead time before results are published. On top of all that work there's New Zealand Lichen Checklist to help update and my new, extended lichen book to work on, so 2017 promises to be a very busy year.

Some notable books by other botanists were a feature of last year's correspondence. These included Alan Mark's *Standing My Ground*,

which is in the University Book Shop and *Allan Cunningham's Precursor to the flora of New Zealand*. Compiled by Peter Heenan, Brian Molloy and Jeremy Rolfe, this can be ordered online from NZPCN.

I hope you all had a wonderful summer and are looking forward to enjoying another year of interesting talks and trips put together by your hard-working committee.



Double rainbow over the fabulous Mavora trip campsite (Photo: Allison Knight)

Treasurer's Notes

Mary Anne Miller

Reminder: 2017 subscriptions are now due. Please see the inside back page for a membership form. If unsure whether you're membership is valid please contact me at maryanne.miller53@gmail.com to receive an update.

I'm pleased to say our end of 2016 financial position (not the end of the financial year which

is 31 March) was healthier than this time last year. Our working account has \$3,111, the Audrey Eagle Fund has \$10,868 and the Business Saver Account, where we hold funds for special projects, has \$7,489.

Our next newsletter will have a call for applications to the 2017 Peter Bannister Student Field Grants. If you're a Masters or PhD student at the University of Otago, with a botanically related topic which includes fieldwork, you may wish to consider this means of funding.

Editor's Notes

Kate Caldwell

Thank you to all of the wonderful people who have contributed their photographs, stories, drawings and skills to this issue of the newsletter. The mushrooms on the cover page are *Leratiomyces erythrocephalus*, taken from a painting by Tegan Anderson which won the member's choice award in the 2016 Audrey Eagle Botanical Drawing Competition.

Have you got ideas or suggestions that you would like to see explored in the newsletter? We welcome your contributions, large or small. Copy for the next newsletter is due on 10th May 2017, but early submissions are most welcome.

Editor's guidelines: Try to aim for a 0.5–1 page of 14 pt. Times for news, trip/meeting reports

and book reviews and 1–5 pages, including illustrations, for other articles. Electronic submission by email to kate.caldwell@dcc.govt.nz is preferred. Send photos as separate files and remember to include photo captions and credits.

Disclaimer: The views published in this newsletter reflect the views of the individual authors and are not necessarily the views of the Botanical Society of Otago.

New Members

A warm welcome is extended to new BSO members Larissa Wood and Jill Hetherington.

We would also like to thank Gill Rapson, Brian Rance and Jill Hetherington for their kind donations.



While you are out over the coming months, consider taking photos for the Botanical Society of Otago Photographic Competition.

Entries close on May 1st 2017.

Further details and entry criteria will be announced on our website and facebook page.

Correspondence and News

University of Waikato Post Graduate Scholarship

from NZPCN Newsletter, December 2016

A postgraduate scholarship in plant evolutionary biology is available at University of Waikato to work on “Dating the appearance of the divaricate growth form in the New Zealand flora”. The topic is available as either an MSc or a PhD and the scholarship covers stipend and fees. Overseas students may apply for the PhD scholarship; the MSc scholarship is open only to New Zealand students. The student will work with an interdisciplinary supervisory team including Chris Lusk, University of Waikato, and Rob Smissen, Landcare Research (Lincoln). The laboratory work will be carried out at Lincoln. This thesis topic forms an important part of a 3-year Marsden project recently funded by the Royal Society of New Zealand.

A knowledge of evolutionary biology, molecular biology, plant genetics, taxonomy and systematics, statistical modelling, and bioinformatics would all be advantageous. The successful candidate will have excellent verbal and written English skills, as well as good organizational and communication skills. You will be able to work independently, enjoy new challenges and take pride in your own work. Please contact Chris Lusk, (chris.lusk@waikato.ac.nz) or Rob Smissen (smissenr@landcareresearch.co.nz).

Botanical Art & Illustration Classes

Learn the art of botanical illustration through the exploration of a wide range of colour illustration skills and strategies studying native and exotic

flora from the Olveston and Dunedin Botanic Gardens.

Due to the success of this course in January, a second ten-week course will begin on Saturday 22nd. April at Olveston. For information contact reception@olveston.co.nz.

New Names for some Otago, Southland and Stewart Island plants

John Steel

Some new name combinations for Otago, Southland and Stewart Island have turned up lately just to fascinate or infuriate - depending on your nomenclatural vicissitudes!

1. *Leontodon autumnalis* L. (1753) now *Scorzoneroides autumnalis* (L.) Moench (1794) Asteraceae. Common throughout Otago and Southland, though being just another of those common, yellow daisy things is possibly ignored more often than not.

[Greuter, W.; Gutermann, W.; Talavera, S. (2006) A preliminary conspectus of *Scorzoneroides* (Compositae, Cichorieae) with validation of the required new names. *Willdenowia*, 36:689-691.]

2. All the species of *Schizeilema* have now been returned to *Azorella*. The megaherbs, *Stilbocarpa*, have also been moved there. Allan Herbarium has accepted these changes.

[Plunkett, G.M.; Nicolas, A.N. (2016) Assessing *Azorella* (Apiaceae) and its allies: phylogenetics and a new classification. *Brittonia*, doi:10.1007/s12228-016-9446-0]

Schizeilema cockaynei (Diels) Cheeseman (1925) now *Azorella colensoi* Diels (1908) Apiaceae. Otago, Southland and Stewart Island.

Schizeilema exiguum (Hook.f.) Domin (1908) now *Azorella exigua* (Hook.f.) Drude (1897)

Apiaceae. Otago and Southland.

Schizeilema haastii (Hook.f.) Domin (1908) now *Azorella haastii* (Hook.f.) Drude (1897)

Apiaceae. Otago, Southland and Stewart Island.

Schizeilema haastii var. *haastii* Domin (1908) now *Azorella haastii* subsp. *haastii* Domin (1908) Apiaceae. Otago and Southland.

Schizeilema hydrocotyleoides (Hook.f.) Domin (1908) now *Azorella hydrocotyloides* (Hook.f.) Kirk (1899) Apiaceae. Otago and Southland.

Schizeilema nitens (Petrie) Domin (1908) now *Azorella nitens* Petrie (1892 (1893)) Apiaceae. Otago and Southland.

Schizeilema trifoliolatum (Hook.f.) Domin (1908) now *Azorella hookeri* Drude (1897) Apiaceae. Otago, Southland and Stewart Island.

Stilbocarpa lyallii Armstrong (1881) now *Azorella lyallii* (Armstrong) G.M.Plunkett & A.N.Nicolas (2016) Apiaceae. Otago, Southland and Stewart Island.

3. For your information, some proposed new names have been mooted for our Blechnaceae much to the consternation of some, but to emphatic agreement among others. Allan Herbarium is yet to make a decision whether or not to accept them. Those underlined are not recorded from Otago, Southland or Stewart Island. The species that were moved from *Doodia* into *Blechnum* have been returned to *Doodia*. Make of it what you will!

[Gasper, A.L. de; Almeida, T.E.; Dittrich, V.A. de O.; Smith, A.R.; Salino, A. (2016)

Molecular phylogeny of the fern family Blechnaceae (Polypodiales) with a revised genus level treatment. *Cladistics*, 32(5):1-18.

Gasper, A.L. de; Dittrich, V.A. de O.; Smith, A.R.; Salino, A. (2016) A classification for Blechnaceae (Polypodiales; Polypodiopsida): new genera, resurrected names, and combinations. *Phytotaxa*, 275(3):191-227]

Blechnum blechnoides *Austroblechnum fernandezianum*

Blechnum chambersii *Austroblechnum lanceolatum*

Blechnum colensoi *Austroblechnum colensoi*

Blechnum discolor *Lomaria discolor*

Blechnum durum *Austroblechnum durum*

Blechnum filiforme *Icarus filiformis*

Blechnum fluviatile *Cranfillia fluviatilis*

Blechnum fraseri *Diploblechnum fraseri*

Blechnum membranaceum *Austroblechnum membranaceum*

Blechnum minus *Parablechnum minus*

Blechnum montanum *Parablechnum montanum*

Blechnum nigrum *Cranfillia nigra*

Blechnum norfolkianum *Austroblechnum norfolkianum*

Blechnum novae-zelandiae *Parablechnum novae-zelandiae*

Blechnum penna-marina *Austroblechnum penna-marina*

Blechnum procerum *Parablechnum procerum*

Blechnum triangularifolium *Parablechnum triangularifolium*

Blechnum vulcanicum *Cranfillia*
vulcanica

4. A recent paper has looked at *Gastrodia* and given names to the three tag-named specimens, “long-column”, *G. molloyi*, “long-column black”, *G. cooperae*, and “city”, included in *G. sesamoides*. [Lehnebach, C.A.; Rolfe, J.R.; Gibbins, J.; Ritchie, P. (2016)

Two new species of *Gastrodia* (Gastrodieae, Orchidaceae) endemic to New Zealand. *Phytotaxa*, 277(3):237-254]

Gastrodia “long-column” now *Gastrodia molloyi* Lehnebach & J.R.Rolfe. This is common throughout Otago, Southland and Stewart Island.

New photographic guide to the New Zealand species of the fern genus, *Polystichum*

John Steel

For some time I have had problems with students bringing to me specimens they have identified as *Polystichum silvaticum* - and then prepared to argue the toss when I disagreed. Leon Perrie from Te Papa has fixed this by putting together a substantive, photographic guide to all the New Zealand species of *Polystichum* which should help sorting out this group and he would appreciate any comments on its usefulness – leonp@tepapa.govt.nz.

Check out the complete guide at -

Perrie, L.R. (2017) *A guide to New Zealand's indigenous Polystichum shield ferns*.

https://www.dropbox.com/s/peosjtwjjs0ts/Polystichum_v4Jan2017_120dpi.pdf?dl=0

Weeded Dunedin: a response

Tom Myers

Botanical Services Officer, Dunedin Botanic Garden

David Lyttle’s report on ‘Weedy Dunedin’ appeared in the last edition of the BSO newsletter. (Number 79, October 2016). The ‘Weedy Dunedin’ field trip was held on the 10th July 2016 at Dunedin Botanic Garden as part of the “Our Living World” event hosted by the Botanic Garden during the New Zealand International Science Festival.

Many thanks to David for running Weedy Dunedin. David’s observations are valued, and provide feedback that can be directly addressed.

As David suggests, most of the weeds found are common to our region and are historical escapees of general horticulture. The Botanic Garden, along with garden clubs and private gardeners all need to be mindful of weediness and legal obligations.

Staff of the Dunedin Botanic Garden put considerable effort into weed control within the garden and are proud of their work. Weeding effort is required for planted areas as well as for regenerating bush and marginal land such as roadsides. Extra help is gratefully accepted from Taskforce Green and from volunteers.

We are also trying to engage with Dunedin public over care for biodiversity, including a recent Bioblitz in 2014 and the Our Living World event in 2016. Both of these events included the identification and recording of weeds with the help of the Botanical Society of Otago.

The management of pest plants in Dunedin is primarily overseen by the Otago Regional Council, which maintains a Pest Management Strategy, as well as enforcing the National Pest Plant Accord (NPPA). The latter is a relatively

recent control put in place to prevent the spread of pest plants, and recognises that horticulture can see the rapid dispersal of plants through sales and nursery outlets. The Botanic Garden adopted the National Pest Plant Accord from its outset in 2001, well before it came into force in Otago.

It should be noted that there are a number of references for weeds. Many common garden plants do have weedy behaviour, but may not be included in the NPPA or regional council pest management strategy. In this case a judgement call needs to be made on growing and managing the plant.

Finally, some weeds have relatives that are not as weedy, and can be confused. For example, the *Gunnera* that David mentions as being in the arboretum is in fact *Gunnera manicata* not *G. tinctoria*, and is not listed on the NPPA as a pest plant. Likewise, lesser celandine has not been planted in the pond – but other Ranunculaceae species have been.

Further comments

David Lyttle

Dunedin can be justifiably proud of its Botanic Gardens which are of world class. The staff do a remarkable job considering the resources they have at their disposal.

Whether *Gunnera manicata* is “good” in comparison with the very similar *G. tinctoria* because it has not yet caused problems in the wild and made its way on to the NPPA schedule is something that should be considered carefully when growing the plant.

Tofino Botanical Gardens in British Columbia has decided reluctantly to stop growing both *Gunnera* species on the basis of their behaviour in New Zealand and Ireland *and in their own gardens*.

See <http://www.tofinotime.com/articles/A-T810-24frm.htm>

I certainly agree with Tom that “judgement call(s) need to be made on growing and managing plant(s)” that show weedy behaviour. I am confident that DBG and its staff have the expertise to be proactive in this respect and remove plants from their collections that have the potential of becoming environmental weeds.



Gunnera manicata in Dunedin Botanic Garden
(Photo: Dylan Norfield)

Book Review

From the shores of Gondwana: Review of *Biogeography and Evolution in New Zealand, 2016*

by Michael Heads.

Taylor & Francis, Boca Raton, Florida.
635 pp.

<https://www.routledge.com/Biogeography-and-Evolution-in-New-Zealand/Heads/p/book/9781498751872>

John Grehan

Kaikoura residents recently awoke to see their shoreline raised by two metres and all sorts of marine life stranded above the water. As sudden and dramatic as this disruption was to these organisms, it was only one moment in a long history of millions of years that has moulded the evolution of plants and animals in New Zealand. This evolutionary history is outlined in Michael Heads' new book.

Featuring both geological and biological patterns, this book is unlike any other, and gives a comprehensive study of animal and plant distributions in New Zealand. Beginning with a thorough review of the tectonic structure and history of New Zealand and Zealandia, the book provides a sound platform upon which to assess the origin and evolution of New Zealand taxa and their historical connections with the rest of the world.

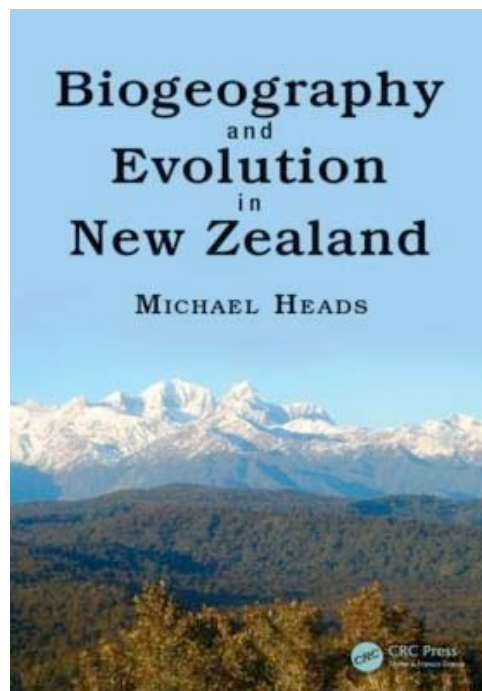
One of the main differences between this book and just about every other book on New Zealand's evolution is that distributions within New Zealand are shown to be integral parts of global distributions. . Organisms in New Zealand are associated with particular geological regions, and these are related to the localities of sister taxa beyond New Zealand. Distributions are at

the core of this book, and Heads provides innumerable examples of distributions that either follow particular geological sectors (such as terranes) or have their boundaries disrupted by tectonic formations (such as faults or suture zones). Heads argues convincingly, with example after example, that these distributions are meaningful if they are interpreted as remnants of ancestral distributions that go back to the Mesozoic, to a time when neither New Zealand nor Zealandia, existed. This ancient origin for most, if not all, New Zealand's endemics may seem unlikely, but it is in the tradition of some of New Zealand's most outstanding early naturalists and explorers, such as Ernst Dieffenbach, Thomas Kirk and Leonard Cockayne.

Heads' book presents extensive biogeographic evidence for the persistence of New Zealand's endemic animal and plant distributions from the time of the dinosaurs - despite all sorts of geological and climatic upheavals. Yes, there has been a widespread popularisation of the notion that New Zealand must have sunk beneath the sea in the Oligocene, leaving the moa, kiwi, tuatara and all other species to float or fly across the oceans to New Zealand after it re-emerged. But this 'drowning' hypothesis never had any geological or biogeographic credibility, and *Biogeography and Evolution* effectively hammers the final nail into the coffin of that somewhat fanciful notion.

What is particularly remarkable about *Biogeography and Evolution*

is that it presents an integrated historical model in which animal and plant distributions are shaped by geological events, when widespread ancestors fragment or break up over time into a multitude of descendants.. Using geological data and up-to-date biological studies, Heads explains previously puzzling distributions such as



disjunctions either side of the Alpine Fault, distributions between Fiordland and Stewart Island (rather than Otago and Stewart Island), distributions among islands off the northeast of the North Island, and many others. This model (called vicariance) also explains why related organisms may only occur in New Zealand and in certain other places, such as Tasmania, eastern Australia, New Caledonia, Lord Howe Island, or Chile, to name a few.

There are many important questions addressed in this book, including why widespread species are not always found everywhere in New Zealand, or why certain species stop where they do, even though there is no ecological barrier. Persistence of life, through its ability to locally disperse and adapt, is a major evolutionary theme developed in this book that explains why young volcanic islands or even young volcanoes in New Zealand can harbour ancient life.

This book is really for the curious naturalist – the naturalist who ponders the deeper question of how New Zealand’s living landscape came to be, and, for example, why certain plants or animals stop at the Moonlight Tectonic Zone in west Otago, why Hutton’s shearwater (a seabird) nests high up in the Kaikoura Mountains, why some plants in Northwest Nelson have their nearest relatives in coastal New South Wales and New Caledonia, or why the Titri-Leith-Waitati fault may help explain the origin of endemic species in Dunedin.

No matter what one may think about these distributions, they do exist and must be addressed in any scientific explanation for New Zealand’s biology. Are you a curious naturalist? Do you want answers instead of paradoxes? Yes? Then this book is for you.

Articles

Long road to recovery?

Threatened plant translocation to Orokonui Ecosanctuary reveals short-term but not long-term conservation gains

Luke Easton, Kelvin Lloyd and John Steel

Experimental translocations are conservation tools that optimise the possibility of successful outcomes for threatened species, such as the establishment of new self-sustaining populations. As such, in 2010/2011, a team of conservationists from Orokonui Ecosanctuary and the Department of Conservation (K. Lloyd, V. Fay, D. Trevathan, M. Hutchison, J. Barkla, and M. Thorsen) performed an experimental reintroduction of the Nationally Vulnerable *Carex inopinata* Cook and Nationally Critical *Simplicia laxa* (Kirk) to Orokonui Ecosanctuary, near Dunedin.

This translocation had two main aims: 1) to establish self-sustaining populations for these rare species, and 2) determine the habitat requirements for each species.

Plants were established at two sites within Orokonui: a warm, north-facing site and a cooler west-facing site, both with sparse understorey beneath a *Kunzea robusta* canopy. Within each site, individuals were planted in three different microhabitats: under rock overhangs, beside rocks, or in open/bare ground areas. Since then, these species have been monitored twice yearly.

Monitoring data to date have been analysed and Kelvin and I are in the process of preparing these results for publication (Lloyd et al. *in prep*). In general, all *S. laxa* individuals died, but a reasonable number of *C. inopinata* survived.

Highly shaded environments negatively affected survival, flowering, and growth of *C. inopinata*, thus habitat requirements for this species seem to be in areas without other, potentially

competing, plant species and/or away from rock overhangs if beneath a forest canopy.

Nevertheless, whilst gaining an understanding of habitat requirements and quality, and the establishment of some individuals, can be considered a success, no recruitment has yet been recorded. In other words, the population of *C. inopinata* at Orokonui is not yet self-sustaining, which means that its long-term viability is not yet secure. Further monitoring will determine whether recruitment will eventuate.

Interestingly, observations of *C. inopinata* within the managed 'Rare Plants Garden' at Orokonui and within the Dunedin Botanic Garden (Fig. 1) indicate healthy individuals with high numbers of flowering culms. At these sites, *C. inopinata* are exposed to full sunlight, but weeding has of course removed outcompeting plants. These observations suggest that as long as weeds are controlled, *C. inopinata* growth and flowering can be optimised, even in full sunlight, which is contrary to earlier research (Morgan & Norton 1992).



Figure 1. *Carex inopinata* at the Dunedin Botanic Garden. (Photo: Luke Easton).

In order to enhance the long-term viability of the population at Orokonui, perhaps what is then required is an area with low ground cover, well-drained substrate, and sparse forest canopy. It would be interesting to see whether this hypothesis can be tested by assessing culm production, seed viability, and potential recruitment for plants in managed areas (like at the 'Rare Plants Garden' and Dunedin Botanic

Garden) compared to those at the translocation site.

References:

Morgan MD, Norton DA 1992. Growth response to light of *Carex inopinata* Cook, an endangered New Zealand sedge. *New Zealand Journal of Botany* 30: 429–433.

Cyttaria gunnii:

The Mystery Mushroom

Larissa Wood

I found the thing during a hike through Fiordland. It was lying on a mat of moss beneath a large silver beech. The "thing" was round and brown with beige, dimpled craters, a beautiful new mystery to my clueless American eyes. At first I thought it was a mushroom, but when I bent down to touch it, it rolled. It wasn't attached to the ground, and had no visible stalk. I called out to the rest of my friends to come back, and we looked for more. A crawl over the surrounding moss turned up several more of the round mysteries in varying stages of blackened decay. We made guesses: fruit? fungus? a strange insect gall? But they didn't look at all like beechnuts, nor were they heavy or dense enough to seem like fruit. Breaking it open revealed only a hollow cavity with no seeds or insects to be seen. It had to be a fungus. I pocketed one of the specimens and left it to Google to solve the mystery.

The answer was *Cyttaria gunnii*- the beech strawberry fungus, a parasitic ascomycete that grows on the living branches and trunks of the silver beech, *Lophozonia menziesii*.

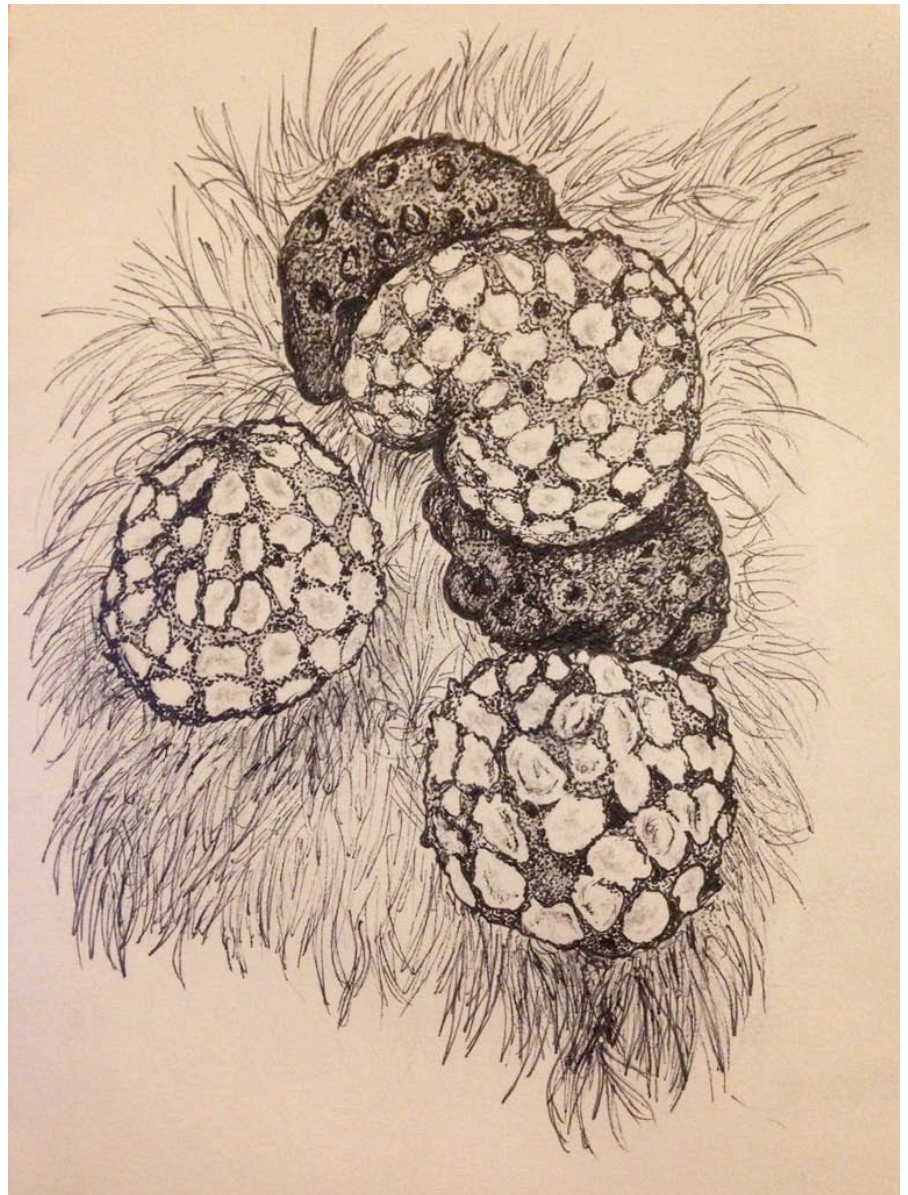
The name *Cyttaria gunnii*, however, is misapplied. The New Zealand "beech strawberry fungus" was assumed to be the same species as a similar "beech orange" found in Australia on

Lophozonia cunninghamii. Both populations were given the name *C. gunnii*, assumed to be identical until molecular research conducted by Kristin Peterson and Donald Pfister suggested that the Australian and New Zealand populations of *C. gunnii* are different species and belong to different clades. A consensus for a new name for the New Zealand *C. gunnii* has yet to be reached.

Regardless of the taxonomical debate, the New Zealand *C. gunnii* has a fascinating life cycle. Germinated spores enter the living tissues of *L. menziesii* shoots and release chemicals that promote the rapid growth of host tissues, causing galls and giving *C. gunnii* the nickname "burl maker." In November, December and January the mycelium in the galls produce clusters of fruiting bodies for sexual reproduction. The fruiting bodies are what my friends and I found on the moss, after they'd fell from the tree branches above. The fruiting bodies are edible, round and mostly hollow, with a sweet-tasting liquid occasionally found inside. With a diameter of about 30 mm, they are approximately the same size and shape as golf balls. Round, light-orange apothecial indentations pock the surface of the fruiting body, giving it an appearance not unlike, perhaps, golf balls made of honeycomb.

This indented surface also serves as a mark of the genus, *Cyttaria*, and its place within the Ascomycota. During development of the fruiting body the apothecia are covered by a sterile membrane called the stroma. As the mushroom matures, the membrane peels back to reveal the

apothecial indentations lined with eight-spore asci. The cup-like shape of the apothecia reflect the common form of ascomycete fruiting bodies, but the "endostromatic" quality is unique to the



Cyttaria gunnii, drawing by Larissa Wood

genus *Cyttaria*. Spores are released from the asci into the forest canopy where they invade new *Lophozonia* shoots for a new cycle of galls, fruiting mushrooms, and old fruiting bodies falling to the forest floor for the delight of Kiwis and confused tourists alike.

Reference:

http://pfistergroup.oeb.harvard.edu/files/dpfister/files/peterson_phylogeny.pdf

Meeting and Trip Reports

The Moriori: an example of precontact innovation in plant management, a talk by Justin Maxwell, 13th July 2016

Sarah Kilduff

Only a week after returning to Dunedin, I traipsed along to my first BotSoc talk in ten years. After saying hello to some familiar faces, and some new ones too, I settled down to listen to Dr Justin Maxwell speak about the Agroforestry practice of the Moriori, the first people on Rekohu, the Chatham Islands.

Justin, a postdoctoral fellow in Anthropology at the University of Otago, completed a PhD thesis in Archaeology: The Moriori. The Integration of Arboriculture and Agroforestry in an East Polynesian society.

Central to Justin's work was research into the methods and techniques the Moriori used to practice agroforestry of *Corynocarpus laevigatus*, known by them as kopi, and on the mainland as karaka. The kernels of kopi, after extensive processing, formed the staple carbohydrate in an environment which would not support kumara or other crops.

The Moriori arrived at Rekohu (known today as the Chatham Islands) with seeds or plants of kopi. Justin's research, using multiple techniques, showed that they were able to propagate and successfully establish carefully managed forests in an environment that was not optimal for the specie's survival. The consolidated dune land along the coast were utilised in forest establishment, planted within the salt and wind tolerant native tree species which provided protection for kopi, a species ill-suited to the high wind environment. Examination of middens showed evidence of changing availability of plant and animal food

resources over time. Anthracology showed the species of woods which were found being used as firewood and importantly those which were not (kopi). Palynological studies showed the pollen of the plant species present at different times and was used as a method for dating when people began to modify the environment. All these methods helped to build a picture of what was probably very careful resource management in Moriori Society.

The dendroglyphs which the Chathams are known for, known as Rakau Momori, are thought to predate the 1835 invasion of Rekohu. Justin spoke about the uniqueness of the Rakau Momori, the mystery of exactly how they were made and what their meaning might be. Previous and current efforts to protect and save the *Corynocarpus laevigatus* trees they were carved into have ranged from surveying the trees in the fifties, fencing against stock, control of pigs, and now erecting windbreaks in an attempt to slow canopy collapse in the remaining forest. Other cultural efforts included the recent hui, involving carvers from around NZ visiting the Chathams so that Islanders can begin to relearn skills in mark making.

Currently Justin is working with Hokotehi Moriori Trust and DOC to preserve the remaining forests. Efforts are under way to propagate tens of thousands of plants for revegetation, primarily to reinstate the wind resistant fringe around the remnant old growth trees. The wind breaks have a ten year life span, so volunteers are needed to help plant over the next few years. At the end of the talk Justin invited interested individuals and groups to come to the Chathams as volunteers to plant trees, working toward sustainable forests.

Justin's passion for Rekohu is evident in how warmly he speaks of the island's history. He impressed on me the impressive feat of the first people in colonising the remote islands. A significant factor in their success was due to the

establishment and careful management of the kopi forests, as well as the other, very finite resources available to them. These management practices allowed the Moriori to thrive as a society in a very challenging environment.

I left the talk quite keen to do a planting trip to Rekohu in the near future. Field trip anyone?!

Audrey Eagle Botanical Drawing Prize-giving and Botanical “Show and Tell” evening, 12th October 2016

Allison Knight

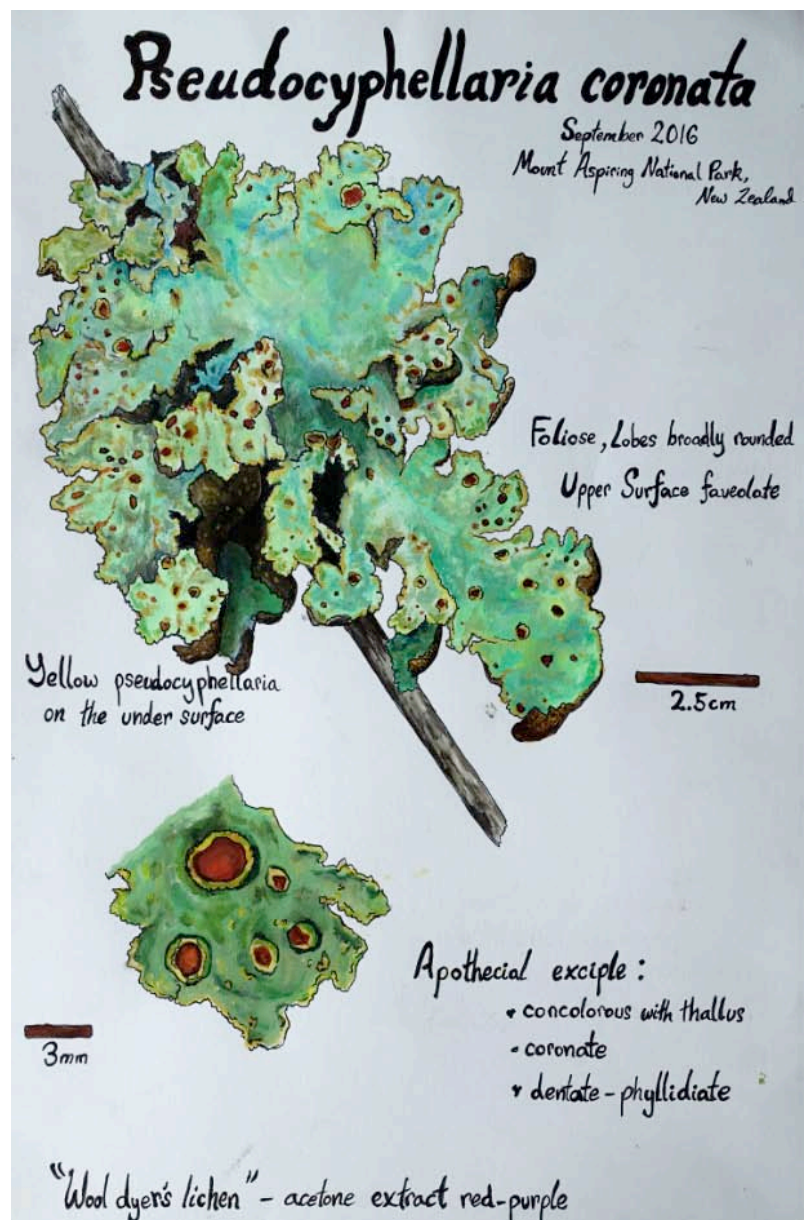
As promised, this was an entertaining and lively evening. Entries for the biennial Audrey Eagle Botanical Drawing Competition were on display and this year members had a chance to vote for an extra Members Choice prize. This was won by Tegan Anderson, who submitted a late entry of a brilliant red *Leratiomyces erythrocephalus* fungus.

Marcia Dale, whose very stunning painting of *Dracophyllum* sold at auction for \$2000 at the last NZPCN meeting in Dunedin, judged the rest of the entries.

She thought the winning entry was stunning on first impression, well laid out, with very good clarity and detail, especially the pseudocyphellae on the lower surface. The rushed-looking writing detracted a little, but as artistic merit is the overriding criterion and it was a subject less often painted this tipped the balance.

Congratulations to Larissa Wood, who won first prize with her painting of *Pseudocyphellaria coronata*. (I swear I had no part in the judging! Marcia has

painted lichens herself, and knows how challenging it is.) Second prize went to Kath Graham for her exquisite drawing of the limestone kowhai, *Sophora longicarinata*, which has a threat classification of Naturally Uncommon. The layout was attractive, and the extra details from whole tree down to fine details of seeds and leaves were excellent. Marcia thought that the botanical notes were good and suggested that having the botanical name on the drawing itself would improve the viewing experience. Well done, Kath!



Pseudocyphellaria (now called *Yarrumia*) *coronata*, by Larissa Wood, winner of the first prize in the 2016 Audrey Eagle Botanical Drawing Competition. (Photo: Allison Knight)

A great variety of other presentations followed. Geoff Rogers displayed an amazing bog pine trunk which he had established grew only 1 cm every 100 years, and at 800 years old was only as thick as his forearm!

Ian Geary, a recipient of a Peter Bannister Student Field Grant showed images of some of the extraordinarily large fossil *Elaeocarpus* endocarps that he is unearthing as part of his PhD in paleobotany.

From there to the northernmost Shetland Islands. Janet Ledingham treated us to superb images of Scottish botanical treasures in their native habitat. Several of these were recognised by our local botanists as somewhat invasive introduced pests at this end of the world.

Lala Frazer brought us back closer to home with a talk about revegetating around Smiths Creek on the steep slopes of Hereweka/Harbour Cone. Two thousand kanuka seedlings were grown in root trainers and planted out using Cerebos Greggs sacks as weed mats.

Michael Broughton, of Dark Skies Dunedin, had us looking up at the stars and discovering the environmental effects of different kinds of lighting on flora and fauna, including ourselves!

David Lyttle brought in a wide selection of plants for sale.

I hope everyone went away feeling happy and enlightened. I certainly did.

Field Trip to Knights Bush, Tuapeka West, 30th September 2016

Rose Clucas

It was with a fresh SE breeze but largely clear skies following a Saturday wet weather postponement that 12 of us set out for Allison and John Knight's property at Tuapeka West. The forest consists of small remnant podocarp

stands, otherwise no longer present, along the Clutha River/Mata-Au. I was thrilled with the chance to wander in this relic, an insight into what is almost completely lost from coastal Otago. Once out of the cars at the top of the spur, with crystal clear skies, we overlooked Chinaman Flat to the north and Pigeon Creek Gully to the south. Dissected by the deep aqua of the Mata-Au, the view spanned the easterly face of the Blue Mountains, cloaked in the Beaumont Forest, which includes swathes of beech, topped with tussock and wetlands. Stunning start!

Over the 35 years that Allison and John have owned the property they have worked to fence out fallow deer from 25 hectares and built a small track network for access. Milling on this face of the river stopped suddenly in the 1950s and was never resumed, sparing what remains. We entered the top through a recently planted area of *Pinus ponderosa* into a regenerating forest of *Kunzea robusta*, *Pittosporum tenuifolium*, *Pseudowintera colorata* and *Pseudopanax crassifolius*, with an understory of *Coprosma* spp. and *Corokia cotoneaster*. *Acaena juvenca* was sparsely present along the track, a form known only in this locality that may warrant a subspecies designation, *Acaena* 'Tuapeka'.

Down the face we entered old growth silver beech and mountain beech. *Peraxilla tetrapetala* clumps attached to the trees in places and *Parsonsia*, everywhere, was budding up to bloom. Hall's totara appeared sporadically and seedlings of matai became scattered. Old tree and branch fall, leaf duff and damp conditions now provided ample habitat for a legion of fungi, moss and fern, under the shelter of the overarching canopy. Newly green patches of *Blechnum fluviatile* lit up the forest floor. A convoluted brown pseudo-morel growing out of a rotten log attracted admiration. Areas of double fencing demonstrated the impact of deer browsing on the less protected forest floor.

Riroriro, tui and korimako were now ringing overhead. John said he had sadly not seen kakariki for a number of years. The gregarious kakariki would have originally flown this forest with mohua and brown creeper. The 230 ha forest and the adjacent Blue Mountains are supporting reasonable numbers of our common natives but the mixed flocks of kakariki and mohua are disappearing into history.

Allison has counted 130 lichens on the property. A new species, tree-living *Coenogonium fruticulosum*, was discovered and described here by Lars Ludwig in 2014. Undoubtedly the best lichen described private block in the Clutha District, Otago and NZ.

We were down at the hut for lunch. Rough hewn with a large open fire, the hut John and Allison had built would claim any budding Thoreau. A number of pipiwharauoa exclaimed from the tree tops as cups of tea and biscuits were provided as hospitality, as a well timed squall passed over.

On down to the beach, Ruby plunged otter-like into the mainstream after sticks. Birch Island lay just beyond the rushing swirl. We contemplated the legendary swim with springtails, across the heaving swell. The presence of the giant springtails on Birch Island was highlighted by Allison at the time of Electricorp's proposal of a dam at Tuapeka Mouth. They contributed to the weight of evidence against the proposal and the designation of the island as a Scientific Reserve. The river benches retained stands of kahikatea, kotare called warnings of disturbance proclaiming their indignation. Tell-tale trails of vagrant moss sign of fallow deer trekking through the forest, where *Lycopodium volubile* scrambled up for light.

Before we left we admired the large straight hammered trunks of matai and old Hall's totara stand along Pigeon Creek gully, saved largely by fortune from milling. On the way back up, several *Pterostylis graminea* reminded us of all that remained as yet unseen.



Miki and Ian admiring *Pterostylis graminea* in flower. (Photo: Allison Knight)

Thanks to Allison and John Knight for hosting this visit. It is reassuring to know that with your efforts this forest is regenerating.

People who came on the trip: Allison Knight (leader), John Knight, Alf Webb, Rose Clucas (scribe), John Steel, Robyn Bridges, Lydia Turley, Matt Harris, Duncan Nicol, Ian Geary, Miki Nomura and Larissa Wood.



Elves eyelashes, *Scutellaria* sp. on a rotten log. (Photo: Allison Knight)

Field Trip to Fiddlers Flat Conservation Area, 5th November 2016

Lydia Turley

The morning of the field trip to Fiddlers Flat turned out surprisingly warm and sunny for early November, meaning that most of us started the trip by stripping off the layers of just-in-case as soon as we reached the reserve. John Barkla started us off with an introduction to the area. Fiddlers Flat was once pastoral land, part of the large “Home Hills” estate. The initiation of the conservation area was a result of a tenure review which found several rare plant species growing in the area. It is a dryland river terrace, an ecosystem which is often not protected well. Despite having been grazed, it has never been tilled, so still has important conservation values.

We started the morning by checking out the upper terrace. The vegetation here was dominated by grasses. Alex explained the difference between *Carex* and *Uncinia* for me; *Carex* has male and female flowers on separate stalks, while *Uncinia* has them both on the same stalk. *Uncinia* has been subsumed into *Carex*, but at least this character can help us narrow



Manuherikia river (Photo: Corinne Kramer)

down a sedge to belonging to some subset of the *Carex*. The other grass which I remember is *Festuca novae-zelandiae*. It is upright, yellow and green in colour and scabrid backwards. Scabrid is a nice word. It means rough to touch. In other words, *F. novae-zelandiae* has one direction which suits stroking and one which doesn't.

Among the grasses grew lots of *Pilosella officinarum*, *Hieracium lepidulum* and *Hypochaeris radicata*; all things that I'd usually call dandelions, with big yellow flowers, and purplish leaves with long, obvious hairs. There was also *Rumex acetosa*, commonly known as sourgrass despite not being a grass. It has a sharp taste and can be eaten in salads – it's always nice to find a meal on a botany trip!

Lying among the grasses was the vagrant lichen *Xanthoparmelia semiviridis*. It is yellow and curled into clumps, so fairly easy to spot. The clumps flatten out when wet. This lichen is not attached to anything; it instead gets blown from place to place. On a flat, windswept river terrace, I imagine it could travel a fair distance in one lifetime.



Botanising the river terrace. (Photo: John Barkla)

There were three orchids; a *Thelymitra* which wasn't in flower, *Pterostylis tristis* and *P. tanypoda*. Both *Pterostylis* are naturally sparse, similar and it's not unusual for them to be growing together. *P. tanypoda* pops up in the same place year after year, while *P. tristis* grows in a place one year and not the next.

The real action came in the afternoon, when we explored the rocky slope and lower terrace. The rocky slope is home to several rare plants. The rarest of these is *Lepidium sisymbroides*, with fewer than 800 plants known in the wild. It's currently listed as nationally endangered. It's only found in Otago and likes rocky habitat, like the one we found it in.

Raoulia monroi is listed as At Risk- Declining. It's quite distinctive, with fan-like leaves arranged in two rows along the branches. It's found throughout the island and likes open, rocky ground. *Muehlenbeckia ephedroides* is also At Risk- declining. At first glance, it looks like a bunch of sticks – nothing I'd have paid any attention to if it hadn't been pointed out. On closer inspection, it has tiny grey leaves.

The lower terrace was home to *Clematis marata* and *Clematis quadibracteolata*, both in flower. *C. marata* has greenish sepals, whereas those of *C. quadibracteolata* are longer, skinnier and purplish.



Pterostylis tanypoda (Photo: John Barkla)

Field Trip to the Mavora Lakes Park, 9th-11th December 2016

Bill Morris

On the 9th of December the Botanical Society of Otago headed to Mavora Lakes, sandwiched between the Thompson and Livingston mountains in Southland. We arrived as dusk settled across the picturesque valley, pitching tents, slapping sandflies and gathering around the picnic table for a cuppa with David Lyttle and a chat about ultramafic rock, which forms a unique geological band through this region.

Ultramafic rock is igneous or meta-igneous rock rich in iron and magnesium that forms a swathe through the region and is associated with the Alpine Fault. The effect on botanics is marked, with only stunted things growing in the basic

soils. We had hoped to get up above the tree line the next day for a look at some of this landscape, but the weather was precarious to say the least, with some talk of a big storm coming through in the night.

So as it turned out the focus of our trip was the Gondwana beech forest that clothes the valley sides, weather preventing a more adventurous excursion to the sub-alpine region.

On the morning of the tenth we headed off to the Kiwi Burn, crossing the swing bridge that hangs between gnarled sedimentary boulders to plunge into the forest. As a first time botanist my first task was to figure out the difference between the three kinds of beech trees we encountered.

Pretty soon after setting off we found ourselves at a clearing surrounded by bog pine, celery pine and tussock. Much of the group disappeared into this swamp, to be lost from sight for the rest of the day among the grasses. This, I quickly learned, is just what botanists do.



Our journey took us through giant groves of red beech with bark like puff pastry, past spectacular fungi growing against the side of trees and through more wetlands. My group moved ahead and arrived at the Kiwi Burn hut to eat our lunch and wait for the others, who were still back there somewhere, immersed in the vegetation. The final stage of the trek took us through peaceful forest, the highlight being a couple of massive and beautiful speargrasses just beside the hut. The enormous golden flowers beautifully offset the metallic blue of the spiny leaves. They looked like they might eat you if you got too close. Now that's what I call botany!

The path back to the car park was lined with pretty little orchids flowering discretely in the

ranks of red beech, *Fuscospora fusca* (Photo: Bill Morris)



Aciphylla glaucescens in full flower (Photo: Bill Morris)

shade of fallen beech logs. At this point I mastered my own awkwardness about lying face down on the ground to examine a tiny flower or plant and plunged into the mud to photograph the graceful little blooms.

That evening, we gathered around the camp fire for an interesting discussion



Approaching Kiwi Burn hut (Photo: John Barkla)

of among other

things, lichens and mosses and the evolution of flowering plants. Night fell on our camp as the fire coals brightened and whisky warmed our bones.

To our surprise a mysterious Irishman materialised out of the darkness, drawn by the welcoming light of our fire. It transpired that he possessed, of all things (in the circumstances of a botany field trip,) a broad knowledge of the vegetation of Ireland and after relaying with a poetic turn of phrase the finer details of the various type of bog that one might encounter in the wilds of that country, he bid us farewell and melted away into the night, leaving us to ponder the reality of his existence, or whether some group hallucination, perhaps brought on by paying too close attention to some fungi or other had overtaken us.

The next day was warm and hot and we wandered up onto the terrace above the campsite to examine some of the vegetation around a shallow wetland that sits on this ground. There were interesting dracophyllums and some fascinating lichens in this area, which were soon competed with by the allure of giant *Chionochloa* tussocks for our attention.

Eventually, I confess, the draw of Nature's outdoor furniture proved too much and I reclined in the grassy embrace of a snow tussock, calming my academic guilt by assuring myself that contemplating the different tree types in the forest canopy on the other side of the valley while lying on my back in the sun did in fact count as botany.

And so our expedition drew to a close and we packed up and headed out of

the valley, hopeful of a return in the near future.



Lichens seen on the Kiwi Burn track. From top: Crocodia rubella, Bunodophoron australe, Cladonia pleurota (Photos: David Lyttle)

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