



BOTANICAL SOCIETY

OF OTAGO



Newsletter Number 81

June 2017

BSO Meetings and Field Trips

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.

Wednesday 12th July 5.20 pm Summer in Costa Rica. Speaker: Duncan Nicol, University of Otago Ecology student. Duncan and his friend Oli decided to spend the summer as volunteer researchers in a Costa Rican cloud forest at 2000m altitude, just around the corner from the highest mountain in Costa Rica. Duncan will talk about the reserve where their research was conducted, the local environment, and a few of the plants found around trails and tracks.

Saturday 22nd July 9 am –1 pm Herbarium Workshop - a joint BSO/Botany Department initiative. Have you ever wondered what goes on in the internationally recognised Otago Regional Herbarium (OTA), or wanted to donate an unusual specimen but not known how? The curator, Janice Lord, will introduce the herbarium and demonstrate the preparation and curation of vascular plants. John Steel will share his considerable knowledge of ferns and the non-vascular plants (mosses and liverworts); Katja Schweikert will demonstrate how to deal with those tricky freshwater and marine algae (seaweeds); Allison Knight will bridge the plant and fungal kingdoms with the lichens, and last up will be David Orlovich on how to collect and preserve those ephemeral fungi and slime molds. There will be tours of OTA and hands on time to prepare specimens yourself. Meet at 9 am, Upstairs Lab, Department of Botany. Please register by Friday 14th of July. Programme and registration forms will be posted on the BSO website, bso@otago.ac.nz from the 1st of July. Places are limited, so be in quick! You are welcome to bring any fresh specimens you'd like advice on preparing, or dried ones that you would like to curate. Contact Allison Knight, (03) 487 8265, 027 487 8265.

Wednesday 23rd August 5.20 pm Catch and Release: collecting Otago's insects & spiders without pins and needles. Speaker: Dr. Steve Kerr. When walking through the bush, we may not realise the millions of eyes – paired and otherwise – checking us out while we think we are closely examining our surroundings. Steve will provide an introduction to the remarkable variety of creatures that surrounds us while giving some tips to those, who are photographically inclined, on how to capture and record them.

Saturday 26th August 9.00 am Visit to Moira and John Parker's property at Hoopers Inlet. The slope behind Little Hoopers Inlet supports a surprising variety of regenerating fern, shrub and tree species. From there we can walk through young totara beneath a kanuka canopy and on to the shrubland on the top of Varleys Hill. For those wanting a longer day, there is the option of walking back down the

north side of the hill through mature broadleaf/podocarp forest, with a ride back to Hoopers Inlet Hall. Meet at Botany Department carpark at 9.00 am or Hoopers Inlet Hall at 9.30 am. Contact David Lyttle, (03) 454 5470, email djlyttle@ihug.co.nz

Wednesday 20th September 16th Annual Geoff Baylis Lecture “Living in the rainshadow: New Zealand’s most distinctive and threatened ecosystems” Speaker: Dr Susan Walker. Castle 1, University of Otago (drinks and nibbles starting from 5.15 pm in the concourse). The Geoff Baylis Lecture is held annually by the Botanical Society of Otago, in conjunction with the Department of Botany. It is named in honour of Dr Geoff Baylis, the first Professor of Botany at the University of Otago. This year's lecturer is Dr Susan Walker, an ecologist with Manaaki Whenua - Landcare Research in Dunedin. For the last 20 years her research has focussed on the past and present ecology of some of New Zealand’s driest, and most invaded and modified terrestrial ecosystems. These mixtures of short tussock grasslands, shrublands, cushionfields and mat vegetation are the interface between high producing pasture and ‘our golden tussock grasslands’ in the inland eastern South Island. Two realisations grew simultaneously, that: (1) these habitats have special ecological character, representing the last remaining examples of the evolutionary response of the native biota to protracted arid conditions in New Zealand, and (2) they are rapidly disappearing under irrigated pasture and wilding conifers. Susan will describe the cryptic ecology of a disappearing biome, focusing on the fauna and flora of the Mackenzie Basin.

Saturday 30th September 9.15 am Visit to Hereweka Gardens. Hosts Peter Cooke and Anna Moore have created a noteworthy garden that features herbaceous perennials in a woodland setting on a sheltered, rural site at Hoopers Inlet. The garden also contains a collection of plants from New Zealand offshore islands and a unique collection of plants that had their origins on the Gondwana supercontinent before it broke apart. We aim to arrive on site at 10.00 am and end at 12.00 midday. There will be a variety of plants for sale from their nursery. Contact David Lyttle, (03) 454 5470, email djlyttle@ihug.co.nz

Saturday 7th October 8.00 am Field Trip to Flat Top Hill, Central Otago. Flat Top Hill is just that – a flat top hill, about 11 km long, parallel to State Highway 8 on one side and Lake Roxburgh on the other and located just south of Alexandra. It rises gently to a flat crest dotted with schist tors and comprises a broad range of dry vegetation types which host a number of unusual species, including several small summer annuals. We will be concentrating on the drier, northern end which includes Butchers Dam with its own suite of aquatic plants, and palaeosols with some seldom seen saline loving species. Involves a two and a half hour drive from Dunedin so meet at Botany Department car park 8.00 am returning 6.00 pm. Contact John Steel, 021 2133 170 or email john.steel@otago.ac.nz

Wednesday 11th October 5.20 pm Geological constraints on Zealandian biogeography Speaker: Dr Hamish Campbell, senior scientist with GNS Science Lower Hutt and GNS Science ‘geologist in residence’ at Te Papa, the National Museum of New Zealand, in Wellington. Dr Campbell has become a well-known geologist to the New Zealand public in the context of museum exhibitions, popular books and the media. His current research interests are primarily concerned with the origin of the older sedimentary and metamorphic rocks of New Zealand, and the geological constraints on the origin of the native biotas of New Zealand and New Caledonia. He is co-author with Dr Nick Mortimer of “Zealandia Our Continent Revealed” which explores the geological origins and history of the New Zealand continental land mass.

Wednesday 8th November 5.30 pm Of Cabbage Trees and Things. Speaker: Dr. Warwick Harris, Landcare Research. With abstruse reference to the inferences of conservation concerns expressed in Lewis Carroll's poem "The Walrus and the Carpenter", results of a latitudinal study of variation of cabbage trees will be presented. The study began in 1994 and continues with observations on plantations of trees at Auckland, Lincoln and Invermay raised from seed collected from widely separated wild populations of cabbage trees in New Zealand. The adaptive relevance of the morphological and physiological characters recorded, as well as cultural values of cabbage trees, will be considered.

Saturday 25th November 8.30 am Field trip to Purehurehu Point. On this trip we will visit a recently convenanted remnant of coastal Otago vegetation located on a private farm. Known to the locals as Windy Point it is more correctly Purehurehu Point, (māori for moth), and dissects the northern coastal beaches of Whareakeake and Kaikai. Like nearby Heyward Point it is an area that is both botanically and scenically valuable. As well as botanising, some may like to walk down to the beach at Kaikai, visiting the historic caves that have been associated with early whalers, and in more recent times, as a favourite holiday destination for some locals. Rain date, Sunday 26 November. Meet at Botany Department carpark 8.30 am, returning 4 pm. Contact Robyn Bridges, 021 235 8997 robyn.j.bridges@gmail.com

Friday 8th December - Sunday 10th December Field trip to Waikaia Valley and Piano Flat. The Waikaia Valley lies between the Umbrella Mountains to the east and the Garvie Mountains to the west. The Waikaia River joins the Matakura River just north of Riversdale. The Waikaia forest is a mixture of red, mountain and silver beech and is the best remaining example of the beech forests that covered much of the area. There are a number of walking tracks through the beech forest and a track above the bushline to Titan Rocks. We will travel to the DOC campsite at Piano Flat on Friday afternoon and spend Saturday in the field with another opportunity to botanise on Sunday morning. Bring your own tent, sleeping bag, cooking gear, food, sandfly repellent etc. and something to share for a pot-luck dinner on Saturday evening. Be prepared for adverse weather at both the camp site and in the field. Facilities are basic but include toilets, barbecues and picnic tables. Fees are \$5.00 per person per night. Contact David Lyttle, (03) 454 5470, email djlyttle@ihug.co.nz

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 year has started off with a full programme of field trips and talks. Having missed the first talk of the year, and the first two field trips, it was good to be out in the field again in April on the trip to Mt Benger, a place that we have not previously visited. Mt Benger, just short of 1200m, lies on the eastern rim of the great upland plateau lying between Lake Wakatipu and the Kawarau/Clutha River. Two plants attracted my attention on the day; a pretty little alpine bidi-bid, *Acaena tesca* which we found growing on a damp site at the base of a schist tor, and *Gingidia baxterae* growing on a snowbank site in a deep gully. *Acaena tesca* is a naturally uncommon Central Otago endemic and seeing it in fruit on this occasion confirmed its identity. *Gingidia baxterae* is named after Millicent Baxter, better known as a pacifist, wife of Archibald Baxter and mother of James K. Baxter. She was active in the Dunedin Naturalists' Field Club and a keen alpine gardener. The plant is, as are all *Gingidia* species, intensely aromatic and can easily be distinguished from the similar *Anisotome aromatica* by crushing its leaves and smelling them.



Acaena tesca showing the glaucous leaves and fruiting head with its red barbless spines (photo: David Lyttle)

I have been taking stock of my own conservation planting which started over 15 years ago. Initially it was not intended as a conservation planting so there are a few ringers in the mix, *Corokia macrocarpa* from the Chatham Islands, *Veronica strictissima* from Banks Peninsula, *Phyllocladus alpinus*, *Metrosideros excelsa* bought cheap at a plant sale and *Chamaecytisus palmensis* all the way from the Canary Islands. The first step was planting a windbreak of harakeke (*Phormium tenax*) which thrived and enabled a mixture of broadleaf, several coprosma species, *Myrsine australis*, *Pittosporum tenuifolium*, totara, *Hoheria angustifolia*, *Pseudopanax crassifolius* and *Cordyline australis* to establish. There have been a few losses; one very large totara died when it got wet feet due to the drainage changing and a *Carmichaelia* was zapped with herbicide by a DCC contractor spraying the road verges. Another totara and a wineberry got a fairly good dose of herbicide but survived. Strangely, none of the tree fuchsias I planted have survived though they continue to establish in my shrub borders amongst the rhododendrons where they are not wanted. Now that many of the plants are mature and producing fruit, seedlings are beginning to establish themselves under the canopy (and throughout the rest of my garden). The one pate (*Schefflera digitata*) that I planted became a way station on the possum highway which also included the *Chamaecytisus* and has suffered as a result though the latter continues to thrive despite the depredations of the furry pests. Two matai (*Prumnopitys taxifolia*) continue to sulk and despite remaining healthy seem disinclined to grow in contrast to the totaras which are thriving on the site. The plantings I have made have been quite successful in attracting birds; there is plenty of nectar for tuis and bellbirds and the one exotic, the winter-flowering *Chaemaecytisus*, provides a useful food source when other nectar producing plants are unavailable. The coprosmas provide an abundance of berries particularly *Coprosma*

robusta which just arrived despite not naturally occurring in the region. A good planting for birds is also a good place for possums which, despite my own efforts to control them, and the work of the Otago Peninsula Biodiversity Group, continue to be a problem.

So what have I learned about revegetation over the 15 plus years these plantings have been in existence? Not surprisingly land management practices present one of the greatest threats to the continued existence of native biodiversity. After excluding stock (and bulldozers) the haphazard and careless use of herbicides cause significant losses of native vegetation. Pests are a problem as they selectively target key species which reduces the overall productivity of the ecosystem which in turn reduces the food available for birds, particularly in the winter months. Possums are very damaging in this respect as they have already eaten (in the spring) the buds and shoots that produce the flowers and fruit that sustain bird populations for the remainder of the year. The corollary to this is that if you have a healthy planting it will provide a seed source sufficient to maintain itself (and in my own case convert the rest of my garden to a native forest). Some native trees do not need much assistance to arrive. Mahoe (*Melicytus ramiflorus*), Ngaio (*Myoporum laetum*), *Fuchsia excorticata*, *Coprosma robusta*, *Coprosma repens*, *Muehlenbeckia australis* and *Pittosporum tenuifolium* are very successful colonising species and it is probably not worth the effort to propagate and plant them. It is important however to add the less common, less resilient species into plantings. A prime example would be pokaka (*Elaeocarpus hookerianus*) which is very rare locally. Other species that fall into this category are *Raukaua edgerleyi*, *Streblus heterophyllus*, *Lophomyrtus obcordata*, *Pennantia corymbosa* and doubtless others.

The recent arrival in New Zealand of a new pathogen, myrtle rust, has the potential to profoundly change the species composition of

our ecosystems. We could, for example, lose much of our kanuka (*Kunzea robusta*), a myrtaceous species, which then begs the question of what would replace it? An ecosystem with high diversity is a more resilient ecosystem so I would argue that adding a greater proportion of these rarer, less-well known species to our conservation plantings would serve as seed sources not only to preserve the species themselves but add a greater degree of resilience, stability and diversity to our native forests thus assisting their long term survival.

Secretary's Notes

Allison Knight

Beautiful sunny May day here and I've been stuck inside all day working on Bot. Soc. stuff. Always good, though, to be able to help organise interesting meetings and workshops. Tomorrow night I'm going to take some heritage grapes to the AGM. Anthropologist Gill Hamel thinks they taste like the grape that Professor Geoff Baylis brought down to the Botany Department many decades ago. If anyone knows anything more about the provenance of that grape we'd love to hear from you. We bought our grape labeled as "Black Hamburg", but in view of Gill's expert opinion, we are thinking of calling it "Black Baylis". Janice Lord thinks that they taste so good that Bot. Soc. should propagate some cuttings and sell them as a fundraiser, so it would be good to hear from anyone interested in buying a cutting, or in helping propagate some. There will be plenty of cuttings available when we prune after this year's very late bumper crop.

BSO always appreciates getting newsletters and being put on the mailing list of other botanical societies and like-minded groups to keep us in touch with what is going on in the botanical world. This July we are taking a leaf out of the Wanganui Museum Botanical Group's book and are running an Herbarium Workshop jointly with

the Department of Botany. This is very topical, with the shocking news of herbarium specimens on loan from France and from the Allan Herbarium at Lincoln (CHR) being incinerated at the border by Australian quarantine officials. Some of the French specimens dated back to the 19th century and were irreplaceable. Those from CHR were samples of *Buellia macularis*, collected in Central Otago last century. They were sent to aid a revision of New Zealand Buellioid lichens and included the Type specimen, which is an irreplaceable and essential reference standard.

July 22nd is your chance to come and see what goes on in the internationally recognised Otago Regional Herbarium (OTA), based in the Department of Botany at the University of Otago. Experts on vascular plants, ferns, mosses, liverworts, freshwater and marine algae, lichens, slime moulds and non-lichenised fungi will be there to show you the best way to collect, prepare and curate herbarium-standard specimens and to give you hands-on experience.

Lichen herbarium specimens keep well and with care will last for centuries. At the 8th International Association for Lichenology meeting in Helsinki last August I was lucky enough to visit the Helsinki Herbarium to examine the Type specimen of the lichen now called *Dibaeis absoluta*. It was sent to Nylander from New Zealand in 1883 by Charles Knight (New Zealand's first Auditor General, and also the leading NZ lichenologist of his day). Nearly a century later David Galloway, author of the Lichen Flora of New Zealand (and identifier of the recently incinerated *Buellia macularis* samples!) visited Helsinki and revised the name of the Knight specimen. In 2012 this species was given the Threat Classification of Data Deficient in New Zealand. Herbaria are incredibly valuable repositories of reference specimens.



Type specimen of *Dibaeis absoluta* in the Helsinki Herbarium (photo: Allison Knight)

The Helsinki Botanic Garden, which hosts the herbarium, has some very innovative developments, including a sensory garden, a lichen garden, a bryophyte garden, an edible garden and a phylogenetic garden. I'll be giving a talk about my trip to Sweden, Helsinki and Lapland in June and I'd be delighted if you'd join me for dinner afterwards, especially if Ombrellos still have their 2 for 1 pizza deal going. We had a very pleasant dinner there in April after Elizabeth Whitcombe's inspiring talk on the Himalaya.

By the time you read this the AGM will be over and it will be time to start thinking about taking photos for next year's photo competition. The entry system might be a little bit different by then, because it looks as if we are going to have to change our website. If there's any techie person out there who'd like to help us develop a new site, or just learn to be a back-up person to help run it we'd love to hear from you!

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.

Treasurer's Notes

Mary Anne Miller

Our Annual Financial Report for the year ended 31 March 2017 has been completed and will soon be submitted to the Charities Commission. Our Statement of Financial Performance shows our profit is slightly down on last year but the Statement of Financial Position indicates our working capital rose slightly. Our decision to separate the Audrey Eagle Publishing Fund and other occasionally used funds into higher interest rate accounts has paid off, and hopefully we'll see some more upward interest rate movement over the coming year. Our membership numbers are steady but it would be nice to have more young people involved so we're working on ways to attract more students.

We've made some changes to our membership form so it's now easier to join BSO or renew your subscription. Besides submitting your fees through internet banking, you can also submit the subscription form by email.

maryanne.miller53@gmail.com

Editor's Notes

Kate Caldwell

Compiling this newsletter and the programme of upcoming events is always a team effort. Thank you to our dedicated committee for sharing your time, skills and enthusiasm. Thanks also to all the contributors of the articles, photographs and reports – there is something for everyone in this edition of the newsletter.

Personally I'm excited about all the talks and field trips coming up in the coming months, which are looking especially interesting this time around. I really hope that all BSO members will take the time to read over the programme, mark some of the events in their calendars, and

encourage their friends to come along. It can be hard to make the time on a dark Wednesday evening or a cold, wintery Saturday morning to get along to a talk or a trip but whenever I manage to, I'm glad that I did. These high quality events are opportunities to appreciate our local environs, learn from experts, and enjoy the company of a delightful community of botanical enthusiasts.

The cover page of this newsletter features an art work by Natalie Carpenter, titled 'Winter's Grasp'. If you are interested in this print or in viewing some of her other works, you can email Natalie at nankynoodle@hotmail.com.

Do you have 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 September 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 the following new members: Andy Nilsen, Catherine Hosted, Nicola Pyper, Vanessa Healy, Eva Glendinning, Sarah Kilduff, Moises Caminal-Porte, John Knight, Hannah Chen and Barry Suckling.

We would also like to thank Tony Aldridge and Moises Caminal-Porte for their kind donations.

Flora of the Forgotten Islands



© Tessa Bickford

Flora of the Forgotten islands, 03-10 January 2018

Botanical expedition to the Snares, the Auckland Islands, and Campbell Island

*“Perhaps no group of islands on the surface of the globe, of the same limited extent and so perfectly isolated, can boast of three such beautiful plants, peculiar to their flora, as the *Pleurophyllum speciosum*, *Celmisia* [Damnamenia] *vernica*, and the subject of the foregoing description [*Bulbinella rossii*]” – Joseph Hooker, Flora Antarctica, 1844.*

This is an invite to a floristic nirvana. A gardener’s delight. A botanist’s dream. An invite to join a group of like-minded folks in discovering the plants of New Zealand’s southernmost isles – the flora of our forgotten islands. Led by Dr Alex Fergus on behalf of Heritage Expeditions our voyage will take in the Snares, the Auckland Islands and Campbell Island. At the heart of our journey is the search for Hooker’s megaherbs, a suite of oversized, brightly-flowering forbs that include *Anisotome*, *Bulbinella*, *Pleurophyllum* and *Stilbocarpa* (*Azorella*). Using our knowledge of the Subantarctic, we will make the most of all opportunities to experience the unique flora of the roaring forties and furious fifties.

A special 10% discount is available to all members of botanical societies for this expedition. If you have any questions regarding what we might see or would like more details regarding the itinerary then please contact the expedition leader

Alex Fergus, shipsbotanist@gmail.com

Our ability to undertake landings is subject to sea and weather conditions.

Correspondence and News

Myrtle Rust Update

Kate Caldwell

As of 2nd June, the number of properties infected nationally by the fungal disease myrtle rust (*Austropuccinia psidii*) stands at 34. A mixture of plant nurseries, private gardens, retailers/distributors and an orchard have been infected in Taranaki (29 properties), Northland (3 properties) and Waikato (2 properties). So far myrtle rust has been found on seedlings of pōhutukawa, *Lophomyrtus bullata* (ramarama), eucalyptus, mānuka and *Syzygium smithii*.

Myrtle rust is a serious disease that affects a broad range of plants in the Myrtaceae family. The fungus attacks and deforms young, growing leaves, shoots, buds and fruit. Severe infestations can kill affected plants and have long-term impacts on the regeneration of young plants and seedlings. The spores can easily spread across large distances by wind, or via insects, birds, people, or machinery.



How the disease begins and forms - new yellow pustules and small brown spots.



The lesions get bigger and produce masses of bright yellow spores.

Overseas the impacts of myrtle rust have varied widely from country to country and plant species to species, and it is not known yet how this disease will affect New Zealand species. The list of potentially susceptible plants includes iconic natives like rata and kānuka, commonly-planted exotics such as bottlebrush and gum, and local forest species like *Neomyrtus pedunculata*, *Metrosideros diffusa* and *Lophomyrtus obcordata*.

A biosecurity response has been underway since myrtle rust was first detected on mainland New Zealand at the beginning of May. The Ministry for Primary Industries (MPI) is leading the charge with considerable support from the Department of Conservation (DOC). Information and updates about myrtle rust and its detection can be found on the MPI and DOC websites:

<http://www.mpi.govt.nz/protection-and-response/responding/alerts/myrtle-rust/>

<http://www.doc.govt.nz/myrtlerust>

While Otago is unlikely to be next on myrtle rust's trajectory, we can all play a part in the efforts against this disease. Think twice before planting any myrtle species, be vigilant if travelling from areas affected by myrtle rust, and look closely for signs of myrtle rust in your garden and the gardens of neighbours. In particular, check for physical signs on any plants from the myrtle family that you have purchased from a nursery in the last month. Anyone believing they have seen myrtle rust on plants in New Zealand should call MPI on 0800 80 99 66. It is very important not to touch the plants or attempt to collect samples as this can spread the disease.

St. Martina's fern – a request for sightings

John Steel

On the recent trip to Fiddlers Flat, my attention was drawn to the tiniest of ferns tucked away under the overhang of a large rock. The longest frond was only four centimetres long, but the glossy, dark, chestnut brown to black rachis directed me to *Asplenium trichomanes*, a near cosmopolitan species that I have known since my younger days in Britain. In January this year, I came across many plants, much larger, growing among the rocks of a boulder slide in a very dry and very hot slope in the Shotover Valley.

It is fairly well recorded from the South Island, but less so from Otago, where it mainly hails from the Queenstown area. The map shows its Otago/Southland distribution and I would be interested to hear of other sightings where it might be expected to be found among rocks in drier areas john.steel@otago.ac.nz.



Worldwide it is known to have several cytotypes – diploid, tetraploid, hexaploid and even triploid – but in the South Island, only the hexaploid is known and depending on your bent may be a



Asplenium trichomanes (photo: John Steel)

different species, subspecies (proposed), variety or just a form.

The fronds are pinnate, up to about 40 cm. long, and rise, tufted, from a short, erect rhizome. The pinnae are yellow- to dark green, longer than wide, shortly stalked and have a finely toothed margin. The sori are typical of Aspleniaceae, elongated along the lateral veins and opening towards the apex. On the rhizome and base of the stipe can be found many small scales which are usually very dark brown with a very narrow, yellowish margin. I have at least twenty-five common or vernacular names, but the most commonly used here is maidenhair spleenwort. I haven't found any record of māori names for it. St. Martina's fern is an old name dedicated to St. Martina who was apparently tortured to death in 660 A.D. for refusing to follow Emperor Alexander IV's edict that all Christians should

sacrifice to the Roman gods or die. So if you are out and about on 30th. January, St. Martina's Day, keep your eye out for it and let me know.

Acknowledgements are due to the herbaria at AK, CHR, OTA and WELT for their help with the distribution data, and Dr. Patrick Brownsey from Te Papa for answering my silly questions.



Asplenium trichomanes sori (photo: John Steel)

Latest from the eFlora fern updates

John Steel

The eFloraNZ chapter for the Lindsaeaceae has recently been published. It covers the four species, three native and one exotic, in the Lindsaeaceae. *Lindsaea linearis* is the most likely to be found in Otago, Southland and Stewart Island, even round Dunedin, but not all that common and worth keeping a lookout for; *L. trichomanoides* is the most common, but is most likely to be found on the West Coast and Fiordland, although there is one report from Central Otago. *L. viridis* is the least likely to be encountered here as it is primarily listed in collections from the North Island and the north-west of the South Island. The remaining member of the family is mentioned here (although it has only been reported once as wild and then only from the far north of the North Island) because of its similarity to the last specimen and reportedly sold as such in garden centres so it may just make an appearance.

Brownsey, P.J.; Perrie, L.R. (1917)
[Lindsaeaceae eFloraNZ](#)

The eFloraNZ chapter for the Lindsaeaceae has just been published. There are three native species of *Lindsaea* in New Zealand. eFloraNZ online:

<http://www.nzflora.info/factsheet/Taxon/Lindsaeaceae.html>

eFloraNZ pdf:

<http://www.nzflora.info/pdfs/FloraOfNewZealand-Ferns-17-BrownseyPerrie-2017-Lindsaeaceae.pdf>



Lindsaea linearis with fertile and sterile fronds. (photo: John Steel)

Peter Bannister Student Field Grants

Mary Anne Miller

PBSFG Administrator

The last report from the 2015 Peter Bannister Student Field Grant recipients is now presented. Ben Robertson, a PhD student with the Department of Marine Science at Otago University, was granted a time extension so he could undertake field work in Southland on macroalgal growth in estuarine environments at the beginning of the 2016-17 summer. This is a very timely study as New Zealand Regional Councils grapple with increased nutrient loads and setting acceptable limits.

Requests for applications to this year's PBSF Grant have been posted. Applications close on 18 August 2017. Forms and procedures can be downloaded from the BSO website: www.otago.ac.nz/botany/bso/pbfund/php

Peter Bannister Student Field Grant Report

Are water-borne nutrients solely responsible for excessive algal growth in shallow estuarine systems?

Ben Robertson

PhD Candidate, Department of Marine Science, University of Otago

The Peter Bannister Student Field Grant funding was used late last year to travel to New River and Jacobs River estuaries, Southland, where Nick Ward (Environment Southland) and I conducted a field experiment, and collected material for corroborative lab experiments. The experiments were aimed at answering the

question: are water-borne nutrients solely responsible for excessive algal growth in shallow estuarine systems?

To investigate this question, in the field, we assessed nutrient concentrations in all possible sources (sediment porewater and overlying water) contributing to algal growth, and measured algae growth itself over a 5-day period. In the lab, labeled isotopes were used to trace uptake of specific nutrients from either source.

Preliminary results from these experiments suggest that a high proportion of the nutrients required by algae to grow come from the benthic environment, and a smaller proportion from the overlying water column.

For coastal zone eutrophication management, a priority for regional councils through NZ, these results underscore the need to consider the influence of, and potential lag times associated with, alternative nutrient sources (namely benthic sources) when informing nutrient load limits.



Ben Robertson at work in the field



PETER BANNISTER STUDENT FIELD GRANT

CALL FOR APPLICATIONS

Applications are invited for a grant from the Peter Bannister Student Field Grant Fund to assist those enrolled for a PhD, MSc, BSc (Hons) or PGDip at the University of Otago and whose thesis deals with some aspect of botany.

The research project to be supported will be chosen on the basis of appropriateness to the objectives of the Society, namely to encourage the study and knowledge of botany. The grant will be administered through a supervisor's University of Otago account.

The grant is for fieldwork related expenses only. It will **not** support equipment purchases or attending conferences.

Closing date for applications is **18 August 2017**

A copy of the application form and rules may be downloaded from the Botanical Society of Otago website:

<http://www.otago.ac.nz/botany/bsopbfund.php>

Contact for enquiries:

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New Zealand
or email: bsobotany.otago.ac.nz

Book Review

Biogeography Comes of Age Down Under: Review of *Reinvention of Australasian Biogeography – Reform, Revolt, and Rebellion*, 2017 by Malte Ebach.

CSIRO Publishing, Clayton South, Victoria.
180 pages.

<http://www.publish.csiro.au/book/7438/>

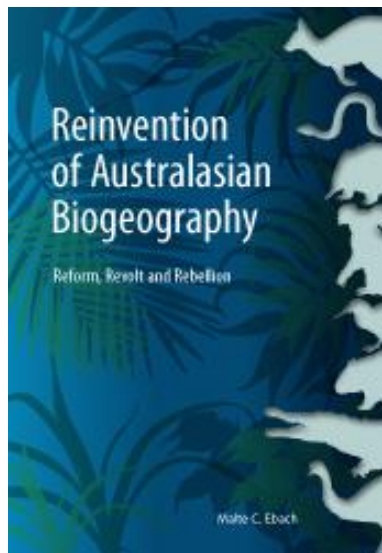
John Grehan

One sign that Australasian biogeography has come of age is that it has now become the subject of a history. With Malte Ebach's intriguing new book, the science of biogeography in Australia and New Zealand may be said to have reached this threshold. Its geography may suggest that Australasia is a remote backwater, but Ebach's book shows that its biogeography is well established, diverse, dynamic, controversial, and above all an integral part of the major theories and practices of global evolutionary biology.

Malte Ebach is a biogeographer at the University of New South Wales and has a long history of investigating the theory and methods of biogeography and systematics (see

<http://mcebach.net/>).

In *Reinvention of Australasian Biogeography*, Ebach avoids a linear narrative and focuses on the way the work of many biogeographers, including many in the present, have only repeated earlier mistakes or problems. Biogeography is one of those subjects in which nearly all natural historians have a strong opinion, and it is probably impossible to ever write a truly dispassionate account. Ebach's book begins by presenting the thesis that establishing a natural biogeographic classification is essential for a scientific biogeography. *Reinvention of Australasian Biogeography* then illustrates the diversity of efforts to create natural biogeographic regions in



Australasia and the inherent difficulties in identifying criteria for recognising biogeographic areas that are truly natural. Ebach shows how the construction of these various areas, regions, and biomes has been strongly influenced by theories about where and how ancestors originated. The development of biogeographic classification has been a major concern for many prominent Australasian biogeographers, including the influential works of Sir Charles Fleming in New Zealand, although panbiogeographers have focused on biogeographic nodes rather than on defining areas.

The biogeographic classifications of Australasia that were made in the 19th and early 20th century provide a historical context for the chapters of Ebach's book that examine three principal themes in Australasian biogeography. The first theme is the increasing acceptance of cladistic principles by Australian researchers in the 1970s and 1980s that led to the equal treatment of fossil and living taxa in the construction of phylogenetic trees and the analysis of biogeographic patterns. The second theme concerns the development of panbiogeography in New Zealand beginning in the late 1970's. Ebach recognises this approach, with its focus on distribution patterns, as a major effort to avoid the history of biogeographic reinvention. He notes that despite its wide development and application, particularly among research students, the approach was successfully stifled by established scientists.

The third of Ebach's themes is the continued prominence of dispersalism in New Zealand biogeography. This theory is maintained in a new form, 'neodispersalism', which relies on fossil-calibrated molecular clocks to provide actual dates of origin, and assumes that the location of endemics is explained by their physical movement. While the involvement of molecular technology in neodispersalism gives the appearance of progress, *Reinvention of*

Australasian Biogeography illustrates how its application to Australasia actually represents a reinvention of a twentieth century notion: the idea that all endemic plants and animals in New Zealand must have arrived from somewhere else. Ebach draws attention to the latest, molecular-enhanced version of this theory, the idea that New Zealand was entirely submerged in the Oligocene and so all its biota must have dispersed to the islands. Nevertheless, it is now clear that there is no supporting biogeographic and or geological evidence. Ebach concludes that rather than advancing biogeography, adopting such molecular approaches has meant that neodispersalism simply reinvents the theory and practice of early twentieth century palaeontology.

Ebach concludes his book by returning to a theme presented at the beginning, namely that the future of biogeography lies in moving away from creating narratives to developing an analytical framework. His preferred framework is to identify the relationships between areas as represented by the phylogenetic relationships of their taxa. Conflicting patterns of relationships for multiple taxa indicate the existence of artificial areas (such as Australia or New Zealand), while matching (congruent) patterns support the existence of actual areas. While this method is described in its broad outlines, its detailed application to the biogeography of Australasia remains for the future.

Naturally a book that focuses on the perspectives of biogeographers as well as actual practice is going to arouse strong responses - whether positive or negative. While I do quite strongly disagree with some of the views expressed in this book, I found the attempt to outline the theoretical themes connecting individual biogeographers to be refreshing. Perhaps the principle weakness, though, was the attempt to assess the contributions of panbiogeography (particularly with respect to the extensive analyses of Australasian, New Zealand, and pantropical patterns) in relation to those of area cladistics, the method that Ebach favours. Whatever one's perspective may be on this and other issues, this book will provide excellent material for further debate, perhaps assisted by a good *kiwi* beer.

Articles

Lake Hāwea Lakeside Reserve: botanising in my new neighbourhood

Helen Clarke

This article discusses the importance and complexity of a (mostly) native species reserve close to an urban environment.

Two and a half years ago my partner John and I retired to Lake Hāwea village on the southern shore of Lake Hāwea. The village was established following the building of an earth dam at the river outlet in the 1950s. This dam raised the lake approximately 20 m affecting all of the natural shoreline. The village and a strip of land, now “foreshore reserve”, occur on elevated land above the new southern lake shoreline.

The reserve separates the shoreline from the houses and gardens of the residents. It features significantly in the lives of many of the Lake Hāwea residents. It is used for recreation of all sorts and for access to the lake edge. A popular walking/cycling track traverses it. The Te Araroa trail is through it.

The area includes kānuka forest with occasional mānuka, north-facing gravel slopes, some seepage areas within the kānuka, and remnant turf / fescue communities. Possibly about 30% of the area is open, regularly mown pasture but these areas continue to allow some of the turfland species to survive

Some exotics were planted by the Electricity Department after the dam was built, mostly in the western area where earth was removed for the dam. As the village developed, a group of locals fought to retain and preserve the strip of land and its natural vegetation cover. For 30+ years they have volunteered their time; weeding, maintaining and planting mostly native plant species in the reserve. Supported by the Hāwea Community Association they lobbied to obtain reserve status for the area. This group is known today as the “Thursday Group”.

The area is now gazetted as a recreation reserve. It is subject to a Management plan and is managed by Queenstown Lake District Council (QLDC). The “Thursday group” of volunteers continues to work within the area under QLDC supervision.

There remains, within the community, significant pressure for ‘autumn colour; and shade plants particularly around the picnic areas. This has been accommodated within the Management plan. I have been observed planting and watering willows and other non natives, which for those who know me, will bring a smile.

The area has featured in our Lake Hāwea lives for all the time (almost 30 years) we have had holidays and now retired here. We have regularly attended “Thursday group” working bees on the reserve, we walk on it daily and have met many locals on its paths. Our labrador dog

knows every apple tree on the reserve and supplements his diet with fallen apples every morning on our walk. I have maintained a monthly bird count line on a track for the past two years.

Last summer with the help of two other locals I started to compile a native plant species list (see p.21). We had a great time doing this and found more than we expected. We identified 36 species of pre-settlement plants, 23 species of planted native, and 3 naturalised herbaceous plants.

As well as an important recreation area, because of the plant species diversity within it, I consider that it is also an area with important ecological values and a place of not insignificant indigenous biodiversity.

This is particularly so for the turf/fescue communities. With local subdivision and land intensification these plant communities are declining rapidly.



Looking towards Breast Hill from the reserve. (photo: Helen Clarke)

Weeds

It wouldn't be a reserve close to private gardens without a garden escapee or 10.

No banana passion fruit or Chilean flame creeper here as I was used to on the Otago Peninsula, but there are plenty of others to occupy our retirement lives. Old man's beard (*Clematis vitalba*) is not far away and occasionally seedlings are found. Gum trees were planted with the initial settlement and they self-seed readily in the dry stony soil. Introduced Cotoneaster (*C. simonsii*, *C. glaucophylla*?) occur throughout, broom (*Cytisus scoparius*) and briar rose are present, Grevillea, silver birch and a species of wattle are also readily self-seeding. Strawberry plant, stinking iris, rowan and hawthorn are there as well but they do not seem to seed as readily as some. All these weeds are targeted by the "Thursday Group" as they sweep from east to west each year on a Thursday morning from March to November. These and new weedy species not yet here will be a constant occupation for us and those of us who prefer natives rather than exotics in our environment into the future.

The group continues an annual planting programme as well.

It is heartening to have observed an increased interest in our indigenous plants and we are regularly complimented on our work. Often newly arrived and/or offshore residents seem to have a keenness for the local species. That is often not seen in some long term residents. I was told by a long time local recently that "natives are good, but in their place". This does perplex me. If not here, where is their place I wonder...

Where to next?

Two of us have recently approached the QLDC reserves manager and with her approval we will work towards getting some interpretive panels placed along the main track. These will have a natural history focus and will aim to inform about some of the native plant communities present. In November I plan to invite interested locals on a botanical tiki tour of the reserve.

I enjoy this reserve daily, as do many others. We all have different reasons to enjoy a slightly wild place on our doorstep. Everyone does see it differently of course but what we have in common is a great enjoyment of its presence in our lives. Oh, and the views from it are not too bad either.

Thanks to Gaye Robertson and, for a time, Rebecca Brown-Thompson, for their help and company on the botanical forays. Thanks to John Barkla for his recent help with some plant identification. Any Botanical Society member calling by let me know. Happy to show you the reserve. If you have grass, lichen or fungi identification skills then you will be doubly welcome to help me out with some further species identification.



Walking track through the kānuka (photo: Helen Clarke)



Brachyglottis haastii (photo: Helen Clarke)

Lake Hāwea Southern Foreshore Reserve Plant List - April 2017

This is what we have found so far.

Note. This is not a complete list of what is here and I am open to further clarification and correction with names. Also there will be more grass species present than I can identify.

Pre settlement plants:

Climbers and scramblers (2)

Rubus schmidelioides var. *subpauperatus*
Muehlenbeckia australis

Woody shrubs/trees (15)

Acrothamnus colensoi
Coprosma crassifolia
Coprosma petriei
Coprosma propinqua
Coprosma propinqua x robusta.
Coprosma dumosa
Coprosma lucida
Coprosma petriei x propinqua
Coprosma robusta.
Corokia cotoneaster
Discaria toumatou
Kunzea ericoides (Most likely called *K. robusta* now)
Leptospermum scoparium
Ozothamnus vauvilliersii
Pimelea oreophila ? subsp. *lepta.*

Herbaceous plants (12)

Acaena caesiiglauca
Acanea sp. (small leaved bluish in mown area)
Brachyglottis haastii
Celmisia gracilentia
Dichondra repens
Euchiton audax
Geranium brevicaule var. *sessiliflorum* (?)
Leucopogon fraseri
Microtis unifolia
Raoulia australis
Senecio quadridentatus
Thelymitra longifolium

Grasses (3)

Agropyron scabrum
Dichelachne crinita
Festuca novae-zealandiae

Ferns (4)

Blechnum penna-marina
Blechnum vulcanicum
Pteridium esculentum
Polystichum vestitum

Planted in the last 30 years (23):

Carpodetus serratus
Cordyline australis
Corokia sp.? (garden hybrid).
Hebe salicifolia
Heliohebe hulkeana
Leonohebe cupressoides
Lopomyrtus obcordata
Lophozonia menzesii
Fuscospora fusca
Fuscospora cliffortioides
Olearia avicenniifolia
Olearia hectorii
Olearia traversii
Oleria lineata
Pittosporum tenuifolium
Pittosporum crassifolium
Pittosporum eugenioides
Phormium cookianum .
Phormium tenax
Poa cita
Pseudopanax crassifolius
Sophora microphylla
Sophora tetraptera (and other varieties)?
totara (either *Podocarpus laetus* or *Podocarpus totara*)

Grasses

Chionochloa rigida
Austroderia richardii

Naturalised non natives

Heiracium lepidulum
Orobanche minor
Pilosella officinarum

Blessed Gorse or The Return of the Native

Mary Cane (writing from Aberdeen, Scotland)

I understand what you mean when you say, 'That Blessed Gorse!', and I know it's a sensitive subject to address in New Zealand.

Poor old gorse, it wasn't always so unpopular. In England sometime about the time Captain Cook was sailing south, this was written ...

Furrzes Broomes Whinnes and Goss occupied dry stoney places and was welcome.

The troublemaking habits of gorse began when the native *Ulex gallei* was 'enhanced' by bringing the more vigorous *Ulex europaeus* from Southern Europe. Farmers in the north faced a longer hungry gap and needed more of gorse's help to survive the long winters. Hungry sheep browsed its soft new shoots and put up with the discomfort better than cattle. There's a saying in Scotland that the depth of a winter can be measured by how many drops of blood there are on a sheep's nose. Horses were fussier eaters and needed the gorse to be softened. Given that its food value was more than turnips and it was available when nothing else was growing, the government decided in 1812 that a broom-park of an acre should be planted on every farm. Having protected and fed the cattle in a late March blizzard the gorse could be cut for fuel later. Furthermore, when the land was ploughed and sown, it provided a better crop of corn because of the nitrogen fixing. It sounded too good to be true and was taken up enthusiastically just at the time of pioneer travel to Australasia.

Gorse, from the old word 'gorst' meaning wasteland, had become so integrated into British rural life it was almost part of the family. There were gorse-based surnames as far back as the 1377 poll tax when surnames first became a requirement: Furseman, Goss, Gors, Broome, Brom. A sign of a significant plant is the number of common names it has. Gorse makes quite a linguistic journey up the United Kingdom from 'vuzz' and 'goss' to 'broom' and 'whinn'. Gerard in his herbal sums up in 1597 by saying, "There be sundry names according to the speech of the countrey people where they doe

grow". Gorse is known as whin in Scotland, probably from a Scandinavian name, although broom is never gorse or whin: here in Aberdeenshire gorse is often referred to as broom. A mystery really because it confuses it with its cousin, *Cytisus scoparius*. I am interested in the history of common names, but my conversations with farmers have been circuitous on the gorse/broom subject. In the end I worked out that because the medieval names of gorse were prickly-broome or thorne-broome, they have most likely been shortened.

In the late 18th and early 19th Century gorse was at the peak of its usefulness in the UK. In the overpopulated, under-resourced country areas, it was nibbled and crushed, chopped and carved, harvested and even provided a living. Richard Mabey, in his book, *Flora Britannica*, says one small holder was recorded making his living cutting gorse at five shillings an acre. Here is the tool he would have used to earn those five shillings.

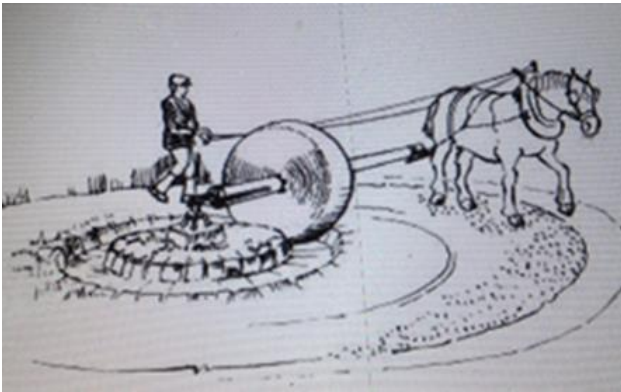


gorse paring shovel

There was even conflict recorded around the country between it being more useful as a hedge or cut down as a source of fuel. In his novel, *Return of the Native*, Thomas Hardy used a character, Clym, who works on the heath. Having lost his sight Clym has been forced to take a job as a furze cutter, cutting to supply the furze ovens that baked bread. Gorse became so over-used at that time that a law was passed to say that cutters of gorse could only harvest as much as they could carry away on their back.

In 1795 there is a report that one acre of gorse could keep six horses for four months with only 20 minutes work needed to bruise the prickles daily. A round grinding-stone called a whin-stone was used to make the prickles palatable for

the cattle and horses. A horse-powered one produced a bigger amount of fodder in a short time. On the coast of Aberdeenshire, not two miles from where I am writing, is the remains of one of these Whin Mills. There is a film of it working in 1936 available on the Internet with the title, 'Belhelvie Jubilee Gazette'. A horse walks in a circle turning a millstone on its edge in a circular trough. Men fork the gorse and add water until it softens into an edible, 'mossy' consistency.



horse driven whin mill

In 1778 the first Scottish gorse-crushing mill was built. At the time it wouldn't just have been deemed a useful addition to pioneer life in the colonies, it would have been cutting-edge agrotechnology.

Let us summon up a contrived vision from the past. Imagine a highland scene, early 1800s. You are paying a visit to a humble dwelling in April. You walk past the gorse hedge where a whinchat calls his tune. The washing is drying, protected from the wind, anchored by the prickles. There is a broody-coop woven from gorse wands. Oxen, chewing on bruised whin, are waiting to be taken out to work in the field. By the door are walking sticks made from the gorse. The door is opened to you and there is the smell of baking. The oven has been fired with gorse to bake the bannocks for the meal. The table is laid with cloths that have been dyed dark green from the gorse foliage and light green from the flowers. There is honey on the table from bees that used the early flowering plant as a nectar source. Cutlery has been made from gorse branches. (As an aside, men used to do a lot of whittling and carving for the household.) The butter and milk on the table are from cows that have browsed the gorse and only survived the winter because of it.

There are pickled gorse seeds to spice up the plain fare. The floor has been cleaned with lye (caustic soda) from gorse ash. Up in the rafters there is a lucky branch of gorse to keep away the elves. The chimney has been cleaned using a bundle of the spiky branches.

(I'll leave you there to enjoy the company and the bannock.)

About that same time, immigration and trade round the world was brisk and ships were able to supply the early settlers' needs. It was therefore logical to assume that the gorse plant would fill just as many gaps over in New Zealand. If it grew faster in the different climate, all the better.

In the event, Europe needs to apologise to New Zealand for sending it across, but it was hard for anyone to anticipate what happened. We now know that when gorse was handed over, it couldn't contain itself. It was as if the Victorian pioneers left London docks with the Artful Dodger and arrived with Bill Sykes. It flowered and seeded twice in a season and grew faster than a man could gallop a horse. There wasn't the population to make use of it and the Industrial Revolution made several of its uses redundant.

So New Zealand, we understand your problem. Gorse has been your churlish lodger for 150 years and is badly in arrears with the rent. You can't wait to see the back of it. But let us consider that maybe, just maybe, it could become a long-term investment. With all that embedded energy, surely someone, perhaps at this very minute, is working on a project designing a gorse brickette machine or a gorse baler that could harvest all that oil rich fibre. Given our political changes it could then be returned to fire a biofuel power station here in the UK.

You heard it here first.

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John Smaillie Tennant (1865 – 1958)

Valerie Smith

John Smaillie Tennant was born at Caversham, Dunedin, in April 1865, the eldest son of John Tennant, a customs officer, and his wife Elizabeth, née Colledge. His father was from Peebleshire, Scotland, and after working for seven years in a wholesale grocery business in Edinburgh, he arrived at Port Chalmers on the *Tamora* in March 1859; his mother, also Scottish, was from Roxburghshire. They married at the Knox Church, Dunedin on 2 January 1864. John Tennant became a long-serving committee member and chairman of the Caversham School, which opened in 1861, and almost certainly his son received his early education there. After four years as a pupil-teacher, John Smaillie Tennant trained for two years at the Normal School, Dunedin, which in 1876 was the first normal school and teachers training college in New Zealand, and he subsequently worked up to become first assistant at the Dunedin High Street School. At the same time he did intermittent University of Otago studies, and graduated BA (1891) BSc (1892) and MA (1899). For six years he was a lecturer in botany at the Dunedin Technical School, which was founded by high schools science master George Malcolm Thomson (1848-1933) for students without secondary education, and for a short time he was locum-tenens professor of biology at Otago University. Tennant later alluded to Thomson as his father in botany, and credited his success to him and the Technical School. He also came to know Donald Petrie (1846-1925), the senior inspector of schools for Otago and a well-known botanist, and agricultural chemist and botanical

explorer Bernard Aston (1871-1951). Tennant was elected a member of the Otago Institute in 1893 and is mentioned in several records of its following meetings.

On 18 December 1894 at St Mark's Church, Sussex Square, in Wellington, John Smaillie Tennant married Edith Ethel Moresby Zohrab, a daughter of Constantine and Ethel Zohrab, and from his parents' home at College Street, Caversham, he moved with his wife to Maitland Street. In 1898 he became headmaster of Ashburton High School, a position he held until 1905, when he became inspector of schools in the Wellington district. Here he was reunited with his Dunedin friends Petrie and Aston, who had gone north before him, and he accompanied them on multi-day expeditions in the Tararua and Kaimanawa ranges. An invited member of the Canterbury Philosophical Institute's expedition to the Auckland and Campbell Islands in 1907 (9–30 November), he concentrated on collecting lesser-known plants: grasses (with Aston), and mosses, liverworts and lichens. On the Snares they found two grasses monopolising the grass meadows – *Poa littorosa* the most abundant, but intermixed with patches of "a most handsome and succulent grass" worthy of further study. Two years later Petrie described *Poa tennantiana*, naming it after Aston's friend and field companion.

In 1912, after extended leave and a visit to England, Tennant took up the position of principal of the Wellington Teachers' Training College, and consequently lecturer in education for Victoria University College. When a new chair was created he became the first professor (part-time) in 1923, retaining his position as head of the training college until 1924. On 24 November that year his wife Ethel died at their home, 2 Central Terrace, Kelburn, and on 18 January 1926, in a quiet ceremony at St Paul's Pro-Cathedral, Wellington, John Smaillie Tennant married Winifred Gray Maitland, former principal of the Kelburn Normal School, and daughter of Canon Adam Gray Maitland of Worcester Cathedral, England. He retired to Kelburn in 1927, moved later to Tahunanui, Nelson, and died on 7 April 1958. It seems that he had no children, and his younger brother, Joshua Leyden Tennant, and sister, Bessie Stuart

Tennant, had died in their youth in 1893 and 1895 respectively (perhaps from tuberculosis, which was then rife). A bequest of £1,000 was made to Otago University, specifically for botanical research, and the annual John Smaillie Tennant Lecture is named in his honour. A

dedicated educationalist with literary and botanical interests, he also played inter-university tennis and football, and in later years relaxed on the golf course. In courtesy he was said to have been second only to Kirk.



Poa tennantiana

Poa (Greek word for meadow grass or fodder) is a genus of about 500 species of grasses native to the temperate regions of both hemispheres. *Poa tennantiana* (syn. *Poa foliosa* var. *tennantiana*), muttonbird poa, is found on the Snares and a few other coastal areas of southern New Zealand, usually in or near seabird nesting grounds, on forest edges, cliff faces and damp banks in relatively sheltered areas. It is a rather stout, stiff-leaved perennial tussock-forming grass up to 1 metre tall. It has a narrow range and is abundant in most of its known locations. Superficially similar to *Poa foliosa* (photographed on Enderby Island in the Auckland Islands group), *Poa tennantiana* has a monoecious rather than dioecious habit and yellow-green rather than blue-green leaves.

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Meeting and Trip Reports

Field Trip to Herbert Forest Podocarp and loop tracks, 4th February 2016.

John Steel

Herbert Forest comprises commercial, plantation forest within which are several areas of native vegetation. One such is the narrow, steep-sided valley of the Glenburnie Stream which flows through regenerating, native forest with a decent number of mature podocarps, especially towards the head below Fern Hill. The tracks make up a long, narrow, figure of eight covering both sides of the valley with the Podocarp Track following the true right of the stream and the Glenburnie and Podocarp Loop Tracks making up the two loops on the left and this is where the nine of us spent the day.

First stop was the car park with its interesting assortment of exotic ruderals in their valiant attempt to reclaim the gravelled area and then it was into the pine forest, mainly *Pinus radiata* with seedlings of *Larix europaea* and *Pseudotsuga menziesii*. The track led us down through the pines with its almost non-existent understorey, except for a rather out-of-place *Centella uniflora*, until we emerged into a mish-mash of exotic pioneers with an increasing number of native shrubs and trees beginning to make their presence felt and soon we were into pure native vegetation. The tortoises and the hares soon sorted themselves out with the main group of hares heading up the track while Alf and Moira took to more leisurely exploring discovering a plentiful supply of *Cyathea colensoi* on the way and Ian becoming totally engrossed in finding the remains of *Prumnopitys ferruginea* seeds with which to compare with his

fossil seed remains. From this he was able to explain comparisons with the material from his PhD. work, a novel dimension to our trips.

The true right of the valley appears to be much wetter than the left and I expected to find a better variety of filmy ferns, but only found a few examples of *Hymenophyllum demissum* and *H. multifidum* amongst the thirty-six species of ferns recorded, including the less common, *Blechnum membranaceum*. Voluntary pest-trapping is carried on and the three traps passed contained two hedgehogs, a stoat and two Norway rats which probably suggests that there is still much work to do in that field. As we progressed, the podocarps became more common as did their seedlings. Lunch stop was near the head of the valley at the start of the shorter, Podocarp Loop Track, and allowed us to catch up and discuss our finds before continuing into the aptly named – and much wetter – loop track through some fine old podocarps with a more substantial ground-cover including *Oxalis magellanica* and *Azorella hookeri*. On the return trip, the hares took off on the Glenburnie Loop Track on the true left which tends to be higher up the valley sides where it is drier and the understorey is dominated by the small shrubs such as *Melicope simplex*, *Pennantia corymbosa* and an assortment of coprosmas.

All in all a rather leisurely outing to a beautiful place with great weather and good company – of course.

Acknowledgments are due to Blakely Pacific for allowing access through their forest; the North Otago Tramping Club for establishing and maintaining the tracks; and Robbie Verhoef for facilitating access.

For a copy of the species list please email john.steel@otago.ac.nz.



The group on the Herbert forest field trip consisted of Kyla Mathewson, Ian Geary, Elisabeth Cooper, Moira Parker, Alfred Webb, Lala Frazer, Eva Glendinning, and Miki Nomura. (photo: John Steel)

Breaking down decomposition: Using teabags to investigate decomposition rates along aspect and elevation gradients a talk by Dr Barbara J Anderson, Ecologist and Research Scientist, Landcare Research, 8th March 2017

David Lyttle

Why would a scientist bury a teabag 1900 m up a mountain and the return back 3 months later and retrieve it? This strange behaviour was explained by Barbara Anderson in her talk to the BSO about her field studies at Mt Cardrona.

The Tea Bag Index (TBI) is a standardized reference method for any decomposition study developed by scientists at Umea University, Sweden and Utrecht University, Netherlands. The method uses a particular brand of tea, Lipton Green tea and Rooibos tea that comes in plastic mesh bags. The bags are buried in the soil at the study site for 3 months at a depth of 8 cm. The two types of tea break down at different rates and serve as proxies that characterize two

different phases of the decomposition process. During the first phase, all the easily biodegradable material is consumed, while in the second phase, mass loss is much slower leaving only the more recalcitrant material. Using the two different teas as a standard litter, an investigator can use the weight loss of each tea to calculate two decomposition parameters, which can be subjected to further scientific analysis.

Micro-organisms in the soil decompose organic material and make nutrients available for plants again. However, not all organic material that is available is decomposed; some is returned to the atmosphere as carbon dioxide (CO₂) and some is sequestered in the soil. The rate of decomposition may have significant impact on climate change through variation in the amount of the greenhouse gas, carbon dioxide, released into the atmosphere relative to the carbon remaining in the soil.

Barbara's first problem was sourcing the standard teabags as the particular brand used for the index is not available in New Zealand. (Apparently New Zealand tea bags are

biodegradable which would make any recovery of their contents problematic.) On obtaining the right sort of tea bags, Barbara and her colleagues climbed a ridge line on Mt Cardrona and buried a lot of tea bags at a depth of 8 cm at different sites along an aspect and elevation gradient from 500 m to 1936 m. Barbara's second problem was finding her buried tea bags. However, three months later, the majority were successfully retrieved, dried and weighed. The weight provided a measure of decomposition and this data formed the basis of the subsequent analysis of the experiment.

In some respects analysis of the gradient data was not as clear cut as one would have predicted (ie rates of decomposition would decrease with increasing elevation due to lower temperatures). Aspect was found to have a greater influence. Further work involved looking at the spatial distribution of the soil bacterial communities along the aspect and altitudinal gradients. The diversity of the microbiological community measured by 16s RNA analysis (ie the greater the number of different RNA sequences obtained from soil samples the greater the microbial diversity present.) Barbara found that bacterial community composition was more closely related to the aspect of a site than its elevation and local factors such as pH.

Designing experiments to measure global carbon cycling and its impact on climate change is not easy so one can appreciate the effort and ingenuity that is required to conduct this type of experiment.



Mt Watkin Field Trip, 18th March 2017

Robyn Bridges

After prudently postponing the trip by a week, we ended up with beautiful weather for the field trip to Mt Watkin. Our botanising trip turned into something of a tramping trip, as most of the group was keen to see both the forest and climb to the top of the mountain, which ended up being a (fantastic) several hour round trip.

The Mt Watkin reserve was gazetted in 2005 and officially became a reserve in 2010. BSO made a submission in favour of forming the reserve, so there was a sense of connection with the place. The reserve is on the south side of the mountain, but we had obtained permission to also go to the top of the mountain, which is on private land.

We decided to start in the forest in the valley and work our way up. The first section of the forest was thoroughly dug over by pigs. It made for easy walking, as the undergrowth was regularly interrupted by clear areas of overturned soil. As we got deeper into the forest the undergrowth became very dense and we found ourselves bushbashing.

My notes say that the first section had ferns, a canopy and plants. For details, it's probably best to see John's species list. It's classified as dry coastal forest. We could hear fantails, bellbirds and tomtits and probably a whole bunch of other birds I don't know. The fantails were flitting around us (probably looking for our insects), which was quite fun. Growing on a *Carpodetus serratus*, we found a *Tupeia antarctica* with a large gall. It has probably been browsed by possums in the past. The mistletoe can exist for years under the cambium and resprout when the browsing pressure is removed. As a result, it's a good indicator species for measuring possum density and we were pleased to see it.

While bushbashing, we came across *Brachyglottis sciadophila*, a rare climbing daisy

which grows in forest margins. We found a matai (*Prumnopitys taxifolia*) with its distinctive hammerbark and went scrounging through the litter looking for cones. We didn't find any, but a few steps along were big puffballs which entertained us for a while. They look like they'd be so much fun to jump on, but I was informed that this is irresponsible behaviour and bowed to social demands, so the fungi went relatively unharmed.

After crossing a creek, we made our way uphill and the forest soon gave way to pasture. Among the grass grew sprawling patches of *Fuchsia perscandens* and *Rubus squarrosus*. Both species had ripe, edible berries. It's always nice to find a meal on a field trip and I hadn't seen berries on native *Rubus* before.

What makes Mt Watkin really special is the 'glaciers' of columnar basalt which flow down its sides. The rock is phonolite, an alkaline version of basalt. Basalt columns form when a body of lava, such as a lava lake, cools. As the rock cools, it shrinks, and cracks appear, leading to the formation of hexagonal columns. These columns break off due to normal weathering processes and fall down the side of the mountain. The "glacial" flows are formed because these rocks naturally follow depressions in the mountainside –just like real glaciers!



The rock glacier (photo: Robyn Bridges)



Mt Watkin/Hikaroroa (photo: Robyn Bridges)



looking south (photo: Robyn Bridges)

The rocks were home to a wealth of lichens but, with Alli still in the lower bush, they went unidentified. Growing in patches over and among the rock were hardy plants; *Aciphylla*, flax, *Griselinia littoralis*, *Fuchsia perscandens*, *Coprosma crassifolia*, *Rubus squarrosus*, *Phlegmariurus varius* (used to be *Lycopodium*), *Microsorium pustulatum*, *Muehlenbeckia complexa*, *Pyrrosia eleagnifolia* and *Lastreopsis glabella*.

At the summit, the columns were still together in their original form. They stuck out at angles between 40 and 90 degrees, suggesting that the mountain had slumped a little since its volcanic formation. From the summit we had a gorgeous view all the way out to Karitane. We had a nice rest among the tussocks and flax while trying to avoid the *Aciphylla*, before scrambling back

down the hill to meet our more conscientious companions, who'd passed on the trek up the hill in favour of a thorough perusal of the lower bush.

All in all, it was a fantastic trip.

Mt Watkin/Hikaroroa Lichen Report

Allison Knight

While the others climbed up through the glorious lichen covered rock glacier to the top of the mountain, John Steel and I had a wonderful time pottering round in the regenerating broadleaf/podocarp forest in the gully below. We kept a sharp eye out for *Ramalina* species, which are needed for a revision of the genus spearheaded by a lichenologist colleague in Spain, and found *Ramalina inflexa* (the commonest species there), *R. celastri* (a spindly shade form) and a tiny thallus of the sorediate *R. unilateralis*. There was enough of the plentiful *R. inflexa* to gather a packet for a metagenomics study of the lichen microbiome. (This is nearly as diverse and functional as the human microbiome and contributes to the production of unique lichen secondary metabolites, some of which have protective and potentially useful antibiotic properties.) The orange apothecia on some of the fallen *R. inflexa* had me fooled. When I took them home and put them under the microscope I saw they were host to a lichenicolous fungus, which an expert in Austria identified for me as the basidiomycete *Tremella ramalinae*. Other interesting finds identified under the microscope included the Data Deficient lichens *Aderkomyces albostrigosus* (there is only one other location recorded in the Flora of NZ Lichens) and *Coenogonium fallaciosum*, both growing on totara leaves. Most exciting for me were the species of *Buellia* that I picked up on pebbles on the tracks of the farm road. These will go to Jack Elix in Canberra for our revision of New Zealand

Buellioid lichens, once the ruckus over Australian quarantine officers destroying the type specimen and several other irreplaceable collections of *Buellia macularis* critical for the revision has been resolved. All in all we had a very pleasant and profitable day, noting one lichenicolous fungus and 21 species of lichen, several of them new to the already quite extensive list collated by John Steel. Many thanks to Robyn Bridges for organizing such a rewarding trip, and to John Steel for his sharp eye and excellent company.

For a copy of the species list please email john.steel@otago.ac.nz.

Field trip to Mt Benger, 8th April 2017

David Lyttle

The summit of Mt Benger is at 1167 metres and overlooks the Clutha Valley above Roxburgh and Ettrick. Access is gained by a 4WD road which was dry that was easy to negotiate on the day. We stopped near the summit and the mist that had been present on the way up cleared and revealed a rolling expanse of tussock grassland interspersed with scattered schist outcrops. The bases of the rock tors provided rich botanical pickings. The presence of *Caltha obtusa* in a hollow suggested snowbanks would be present in winter. Other finds were *Colobanthus apetalus*, *Leptinella pectinata* subsp. *pectinata*, *Ranunculus royi*, *Lobelia angulata*, *Acaena tesca*, *Celmisia prorepens* and *Galium perpusillum*. Moving on to the sunny side of the slope a further suite of plants revealed itself. Plants included *Acaena caesiiglauca*, *Scleranthus uniflorus*, *Pimelea oreophila*, *Coprosma petriei* and a second species of *Colobanthus*, *Colobanthus monticola*. Scattered cushions of silver *Celmisia argentea* some still with the odd flower grew on open sites in the tussock grassland. Several plants of the tiny eyebright *Euphrasia zelandica* were found

growing on sparsely vegetated rocky ground. This plant is an annual and is parasitic on the roots of grasses.

The area is mostly high tussock grassland plateau and we had some discussion on whether the dominant species there was *Chionochna rigida* subsp. *rigida* or *Chionochna macra*. We decided on the day that predominant species was *C. macra*. On talking to Alan Mark later he thought Mt Bengier was too low for *C. macra* so without a specimen or photographic observation the question still remains open.

After lunch we moved on to an area of alpine bog. These bogs are a feature of the eastern Otago mountains and this one was very similar to those found in the Te Papanui Conservation Park, on the Lammerlaw and Lammermoor

Ranges. The plants we recorded there included *Phyllachne colensoi*, *Dracophyllum muscoides*, *Dracophyllum prostratum*, *Pentachondra pumila* and its look-alike *Montitega dealbata*, the comb sedge *Oreobolus pectinatus* and some very late-flowering *Ranunculus gracilipes*. There was an abundance of gentians in flower, *Gentianella serotina* amongst the tussock and *Gentianella amabilis* in the bog itself. The latter species is a feature of alpine bogs in Central Otago and on an earlier trip to the Old Man Range I had found it flowering in profusion, a sight not easily forgotten.

Although there were no real surprises it is always interesting to explore new places and the views from the summit are very impressive. It would certainly be worth returning and exploring the area more.



Gentianella amabilis mass flowering in alpine bog at 1600 metres on the Old Man Range (photo: David Lyttle)

Botanical Society of Otago AGM, 10th May 2017

Allison Knight

Chair: David Lyttle

Apologies: John Steel, Mary Anne Miller, Robyn Bridges, Alyth Grant, Gretchen Brownstein, Kate Caldwell, Bridget Thomas, John Barkla, Esther Dale, Janet Ledingham, Sanjay Thakur

Minutes of 2015 AGM, Chairman's and Treasurer's reports: Taken as read. (Posted on the BSO website)

The following were elected unopposed:

Chairman: David Lyttle

Vice Chair: Gretchen Brownstein

Secretary: Allison Knight

Treasurer: Mary Anne Miller

Committee:

Robyn Bridges (communications officer)

David Orlovich (web manager)

John Barkla (calendar; newsletter proof-reading)

John Steel

Tina Summerfield (university liaison)

Kate Caldwell (facebook, newsletter editor)

Esther Dale (student liaison)

Lydia Turley

Bridget Thomas

Ian Geary was nominated from the floor by Lydia, seconded by Allison. The meeting closed in a record 9 minutes.

Botanical Society Photo Competition, 10th May 2017

John Knight

For the 11th year running, Peter Johnson, Kelvin Lloyd and Rod Morris judged the Botanical Society Photographic Competition with great enthusiasm and expert opinion. Peter assured us it has always been fun! The full-house audience was highly appreciative of the informative and amusing commentary provided by Peter with input from Rod - both highly accomplished botanical/wildlife photographers.

Nine photographers entered this year across 3 categories: plant portrait, plants in the landscape, and plants & people; there was also the usual "People's Choice Award." Presenting judge Peter Johnson noted that numbers of entries were somewhat less this year at 32, but expressed the view that quality was being maintained. Robyn Bridges won the Plants in the Landscape section with her striking photograph of windswept *Kunzea ericoides* that caused an audible gasp in the audience. Mary Anne Miller won the Plants and People section with her poignant photograph of a historic grave site titled "At Rest in the Buller Gorge." John Knight won the Plant Portrait section with a photograph of a Nikau palm titled "Floral Fanfare", presenting contrasting angles and lines. (Amazing what an ignorant fellow can achieve with an iPhone!) The People's Choice Award was hotly contested with many entries receiving several votes each. The prize went to John Barkla for his photograph titled "Toetoe Splendour".



Kunzea ericoides 'Growing with the Flow' – Wharariki Beach (Robyn Bridges)



Toetoe splendour: The tall slender inflorescences of the toetoe Austroderia richardii stand out against the rugged Otago Peninsula coastline (John Barkla)

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Please submit copy for next newsletter to Kate Caldwell by 10th September 2017

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