



Newsletter Number 76 September 2015

BSO Meetings and Field Trips

Saturday 3rd October 9.00 am **Field trip to Silverstream** We will begin from the car park at Silverstream Valley Road and take the Racemans track for a short time before turning off on to the McRaes Weir circuit. The track crosses McRaes stream and follows an old water race. We will decide on the day what, if any variations, of this route everyone wants to do. The forest will be damp, shady, and muddy in places, so bring sturdy footwear and warm clothing along with your lunch and a parka. Expected return time between 3.00 - 4.00 pm. Contact Kate Caldwell phone: 027 890 8840 email: kate.caldwell@dcc.govt.nz

Friday 9th October 10.00 am to 2.00pm **Botany Student Colloquium** Botany students presenting their current research. Guest lecture by Angela J. Brandt. All welcome to attend. Location: Physical Education seminar room 214 (on Union Street), Contact Greg Nelson NelsonG@landcare.research.co.nz

Wednesday 14th October 5.20 pm **Products of history: Immigration timing of New Zealand plant ancestors affects present-day communities.** Speaker, Angela J. Brandt, Landcare Research – Manaaki Whenua, Dunedin. Island floras tend to be distinctive in their diversity and composition often with large numbers of endemic species in few genera. One proposed explanation for this pattern is the interplay of ecological and evolutionary processes where early-arriving plant ancestors encounter greater opportunity to colonise new environments and diversify. These early-arriving groups may thus fill ecological niches and preclude later arrivals from establishing subsequently dominating plant communities to the present-day. Using dated molecular phylogenies to estimate order of arrival of plant ancestors to New Zealand, I show that early-arriving lineages tend to dominate communities in both relatively young (alpine) and older (forest) ecosystems. However, the current challenge is to understand whether anthropogenic modification and introduced species alter the role of evolutionary history in shaping New Zealand's plant communities.

Wednesday 4th November 5.20 pm **Botanical adventures in the Russian Far East, from Japan to the High Arctic.** Speaker, Dr Alex Fergus. Join Alex for a botanical adventure in the Russian Far East. For 14 weeks, over four years, Alex and a ship-load of botanical sympathizers (they had no choice) cruised thousands of kilometres along the entire eastern coastline of Russia. Our exploration begins at the southern tip of the Kamchatka Peninsula, where we follow the Kuril Island chain, an active arc of volcanoes, south toward Japan and our southern-most point, Kunashir Island

(44°N). The Kuril Islands astound with surprises, from abandoned soviet cities in sunken calderas, to bamboo (*Sasa*) thickets under Larch canopies punctuated with fritillarias and trilliums. From here we head north along the east coast of Sakhalin Island and circumnavigate the Sea of Okhotsk, taking in the diverse Shantar Archipelago, before regaining the Kamchatka Peninsula and heading north. Leaving mainland Russia, we push seaward to the westernmost of the Aleutian Islands, The Commanders, treeless clag-cloaked islands with rich herb-dominated tundra, and the resting place of Vitus Bering. We return once again to the Kamchatka Peninsula and proceed to steam north along the coast for 2000 kms. Slowly, forests give way to tundra, as the permafrost thickens, and summer day lengths and temperatures truncate. Nevertheless, floristic 'spectacularities' are still to be found in the likes of keyflower (*Dactylorhiza* orchids) fields and brown bear infested brightly coloured dwarven rhododendron copses. Pushing north, we encounter some of Russia's richest coastal tundra on the southern Chukotkan Peninsula, where terraces dominated by pink fireweed (*Chamerion*) and blue monkshood (*Aconitum*) are beleaguered by the voracious appetites of gobbling hordes of northern pika (tiny-barking rabbits) and arctic ground squirrels. Making our way through the Bering Strait we pass Russia's eastern-most point, Ratmanov Island (Big Diomedes), an Alcid paradise, where Russia is separated from the United States by only 4 kms. We follow the Russian coastline once more north and east, toward the vastness of Kolyuchin Inlet, a haven for waterfowl and migratory waders, where ponds of mares-tail (*Hippuris*) give way to gravelly arid strips of lichens and what are typically alpine specialists (e.g. *Diapensia*), here, only a metre or two above sea level. Once again, and for the last time, we head north, really very far north, to Wrangel Island (71°N). On Wrangel winds buffer the arctic tundra, muskox graze shrubby inland river valleys, and polar bears harangue walrus in the surf. Here also, the last mammoth, a miniature ginger variety, foraged a unique mixture of steppe and tundra plants less than 4000 years ago. With 420 taxa, Wrangel has more than double the plant diversity of any other arctic island of comparable size. Wrangel has more endemic plant species than all of Greenland, and is home to 24 rare arctic endemics, many of which are relic Pleistocene species from the all but lost Beringian Land Bridge. Wrangel Island is the pinnacle of our Russian botanical adventure.

*Note, this talk will be mostly photos, it may include tastings of labrador tea, and for authenticity, we best follow it up with a small glass of vodka.

Saturday 28th November 9am **Field trip to Black Rock Scientific Reserve.** Black Rock Scientific Reserve (144 ha) on the Lammerlaw Range was set aside in 1971 to preserve an area of low altitude snow tussock grassland. The reserve consists of gently rolling ridges (690 – 770 m above sea level) dominated by narrow-leaved snow tussock (*Chionochloa rigida*) associations and with shallow gullies containing sphagnum bog and other vegetation communities. The reserve has been the subject of vegetation monitoring and study since its inception. A study carried out by Bullock in 1972 recorded c. 114 vascular plant taxa. We'll make a plant list during our visit and compare this with the 1972 list. Meet at the Botany department car park at 9am. Return by 4 pm. Leader John Barkla, ph. 476 3686, email: jbarkla@doc.govt.nz

Thursday 10th December, 5.20 pm. **Allan Mere Award Ceremony.** We are delighted to announce that Alan Mark has been awarded the 2015 Allan Mere Award for his outstanding contributions to botany over a life time of distinguished botanical work. Anthony Wright, President of the New Zealand Botanical Society, will be coming to Dunedin to present the precious greenstone/pounamu Allan Mere to Alan. There will also be a presentation entitled, "Images and Adventures", which will tell the stories and show the places where some of the photos selected for Alan's Book, *Above the Treeline*, were obtained. Everyone is invited to come and celebrate this special occasion in the Benham Seminar Room, Room 215, on the second floor of the new wing on the Zoology Building, 346 Great King Street, beside the Captain Cook Hotel. Please be prompt, as the door will only be held open until 5.30.

The award-giving will be followed by our end of year dinner, starting at 7 pm, at Vogel St Kitchen, 76 Vogel St, in the warehouse precinct just north of the Cumberland Street overbridge and tucked in between the two one-way streets. Please let Robyn Bridges know if you wish to attend. Phone 479 8372, email: robyn.bridges@otago.ac.nz

Saturday 19th December 8.00 am Field trip to Old Man Range (Joint trip with Dunedin Branch of Forest and Bird) The Old Man Range is one of the high, block ranges of Central Otago. The main summit plateau is above 1600 m and is of varied topography with bare, windswept slopes, snowbanks, gullies and wetlands each supporting different plant communities. We propose visiting the Hyde Rock area at the southern end of the range where we will be able to see representative examples of the different vegetation types. There are extensive snowbanks where *Hebejeebie trifida*, *Celmisia haastii*, *Geum uniflorum*, *Ranunculus pachyrrhizus* and *Caltha obtusa* may be found. The area is floristically very rich and despite being extensively botanised, there are a number of poorly known or undescribed species present. Examples recorded belong to the genera *Myosotis*, *Ranunculus*, *Chionohebe*, *Cardamine* and *Luzula*. To gain access 4WD vehicles are required. Places on this trip may be limited. The Old Man Range is a severe, high-alpine environment with high winds and very cold temperatures so warm clothing and good parkas are essential. Bring lunch. Leaving Botany car park 8.00 am returning late as we aim to spend as much time as possible in the field. Contact David Lyttle 454 5470, email: djlyttle@ihug.co.nz

Friday – Sunday 12th to 14th February 2016 Field trip to Borland A weekend field trip to Borland in East Fiordland to explore the beech forests, lake margins and alpine areas. The area is rich in botanical and ecological history. A hand lens, camera and sense of adventure are a must! We will be staying at the Borland Lodge, so please RSVP to Gretchen Brownstein by 15th January 2016, email: brownsteing@landcare.research.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/bs/>.

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Chairman’s Notes

David Lyttle

After a prolonged cold winter with spring approaching and the prospect of better weather it is a good time to reflect on past activities and look forward to the events we have planned for the remainder of the year.

On the June Lichen field trip to Leith Saddle amongst the miscellany of my observations I recorded only one lichen. Allison commented “The green crustose thallus and the orange apothecia have the look of *Coenogonium*. I

would be very interested to see any specimens like this.” Once again something novel and interesting turned up on a BSO field trip. Something else that turned up was neither novel nor interesting: a specimen of *Gunnera tinctoria* (Chilean rhubarb) a pest species that has a huge potential to be invasive growing quietly, unseen and unnoticed beside a track in the DCC water reserve.

The July field trip to Bethunes Gully and Mt Cargill again brought its own rewards and disappointments; magnificent views of the harbour and the city from the top of Mt Cargill approached through a rich, diverse

altitudinal sequence of native vegetation culminating in cloud forest dominated by *Libocedrus bidwillii* with numerous ferns including the primitive *Tmesipteris tannensis*. However, the overall effect has been spoiled by careless track maintenance. As the result of haphazard and inappropriate application of chemical sprays much of the vegetation on the side of the track where it passes through the subalpine shrub zone is now dead or dying.

The August field trip to Hereweka/Harbour Cone was very different. In this case we looked at two small native forest remnants defying the odds clinging to the precipitous slopes of Peggys Hill. Although most of the original podocarps are now gone, a single miro and a few totara remain. The Hereweka/Harbour Cone block is now owned by the City and the protection and management of the remaining native vegetation will produce a number of challenges; first there is a diverse and different range of vegetation types in a relatively small area and throughout, there is a sprinkling of local rarities some species being represented by 1-2 individuals.

It is important the Botanical Society continues promoting its field trips for members to enjoy and be educated about the local flora. It is also important that accurate and comprehensive records be compiled on these trips and be made publically available to assist in the management of these areas. Besides the BSO newsletter and own website I would encourage members to post observations on the New Zealand NatureWatch website. There was a rather sparse attendance at Jon Sullivan's June talk, "An Introduction to NatureWatch NZ", due to the awful weather on the day. Anyone wishing to learn more about the site or the mechanics of posting observations can contact John Barkla or me – we will be very happy to assist.

The September field trip to Stevensons Bush was cancelled due to the weather but hopefully the October field trip to

Silverstream will provide another opportunity to look at sites close to the city before we venture further afield to more distant sites in November and December (Black Rock Scientific Reserve and Hyde Rock on the Old Man Range, respectively).

This year's Botanical Show and tell (August meeting) was a tremendous success. It is quite remarkable what is produced; the unveiling of Marcia Dale's stunning painting of *Dracophyllum menziesii* was certainly the highlight for me. Our guest for the evening, Stuart Murray from Christchurch, produced a set of New Zealand native alpine plants grown to perfection and John Barkla, fresh from his peregrinations through Africa, showed some photos of *Welwitschia mirabilis* from the deserts of Namibia. This must surely qualify as the strangest plant on the planet. I am certainly hopeful that next year a set of equally varied and interesting set of offerings will be produced for this popular event.

Congratulations to Brian and Chris Rance, both longstanding members and supporters of the BSO, who were awarded the Queens Service Medal for their services to conservation in the 2015 Queens Birthday Honours List. Brian and Chris have established the Southland Community Nursery which has become a hub for conservation projects in Southland on their property at Otatara, Invercargill. On behalf of the BSO I would like to wish Brian and Chris all the best for the future of their work which I am sure is ongoing and will continue to be an inspiration for the rest of us. Congratulations to Dr Janice Lord for being chosen as the Leonard Cockayne Memorial Lecturer for 2015. Finally, congratulations to Sir Alan Mark for receiving the 2015 Allan Mere Award for his outstanding contributions to botany. The award will be presented to Alan at our December meeting prior to the end of the year dinner.

This year's Geoff Baylis lecture was delivered by Professor Steven Higgins, Department of Botany University of Otago. Steve provided a bit of fresh air with a global perspective on the effects of climate change

and his talk was very well received. A big thanks is due to the members of the BSO Committee who prepared and set out the food for the reception. The floral arrangements provided by Kate Caldwell provided a bit of class and looked great. It was a very enjoyable occasion and the BSO can be justifiably proud of its efforts in hosting it.

Secretary's Notes

Allison Knight

This winter has been warmed by the pleasure of four more BSO members being awarded national honours. Hot on the heels of Neill Simpson's QSM in the New Year's Honours came Brian and Chris Rance's QSMs in the Queen's Birthday Honours. Brian and Chris are active BSO members and well deserve this award. Already this year we have enjoyed their company and expertise on a trip to West Dome in February and in May, a talk with Geoff Rogers on eradicating mice on remote Antipodes Island.

Waikato Botanical Society had already nominated someone for the 2015 Allan Mere Award by the time BSO's nomination of Alan Mark came in. So it was especially heartening that warm letters of support for Alan flew in to our mailbox from Auckland, Taranaki, Manawatu, Wellington, Nelson and Canterbury botanical societies and groups, and from Dunedin Forest & Bird. The President of the New Zealand Botanical Society will present the symbolic greenstone mere to Alan at a special meeting on 10 December. Do come and applaud his decades of outstanding contributions to botany.

A fifth national honour for 2015 went to Janice Lord who was this year's Leonard Cockayne Memorial Lecturer: <http://www.royalsociety.org.nz/programmes/awards/cockayne-lecture/memorial-lecture-2015/>

Jon Sullivan's June workshop and talk explaining how NatureWatch works were extremely worthwhile. You can post an image of a plant and get expert feedback, or

show others something exceptional that you've found. I especially liked Jon's tip of focusing your cell phone camera through a hand lens to get a magnified image, and for those who like instant gratification you can then email the image straight into NatureWatch. It all helps build up a baseline picture of what is growing, flowering or fruiting when and where in New Zealand and encourages communication among naturalists.

The New Zealand Plant Conservation Network (NZPCN) is another worthwhile website where you can view or post well-identified pictures of plants at all stages of their life cycles. You can find current names, descriptions and distributions and even see what other botanical societies are doing. This year for the first time the NZPCN annual conference is in Dunedin, 28 – 30th October, with a stunning programme of workshops, talks, field trips, awards for outstanding contributions to native plant conservation and a botanical auction which includes signed books by Alan Mark and Marcia's amazing painting. 2015 is shaping up to be a stellar year!



Dr Janice Lord delivering the 2015 Leonard Cockayne Memorial Lecture, Flowers in the fridge: Floral biology in New Zealand alpine and Sub-Antarctic zones, at the Hutton Theatre, Otago Museum on Thursday, 3rd September

Editor's Notes

Marcia Dale

Please submit copy for next newsletter by 15th January 2016

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 the editor: imaginarycrayfish@gmail.com 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:

Dr Warwick Harris
Carla de Boer
Hayley Ricardo

Correspondence and News

Congratulations to BSO members Brian and Chris Rance, QSM!

Brian and Chris Rance, Otatarā, Invercargill Awarded the QSM for services to conservation. Brian Rance says a Queen's Birthday Honour for both himself and his wife is "pretty special".

They had worked together for more than 20 years as volunteers on conservation and education projects in Southland and it was appropriate they were both recognised, he said. "It was a surprise, but a thrill. It is reward for something we enjoy doing and are passionate about." They considered the awards also acknowledged the input of others, he said.

"The work we do involves a whole band of people. We see this as recognition for [everyone] taking part in conservation projects."



Chris Rance (seated left foreground) and Brian Rance (standing) at Black Lake, Gertrude Valley on joint Wellington/Otago Botanical Societies field trip, January 2011; others are clockwise, Julia Fraser, Sheelagh Leary, Barbara Simpson, Neill Simpson and Robyn Bridges. Neill received the QSM for services to conservation in the 2015 New Year's Honours. (Photo: David Lyttle)

Mr Rance works as an ecologist with the Department of Conservation and Mrs Rance runs the Southland Community Nursery and Education Centre, which they established at their property at Otatarā near Invercargill.

They have been the voluntary de facto managers of Te Rere Yellow-eyed Penguin Reserve in the Catlins for many years organising and leading regular planting and maintenance days and co ordinating the annual penguin counts.

They both serve on the Te Rere Reserve Advisory Committee and Mr Rance was one of the lead writers of the reserve's management plan. Mrs Rance has sourced funds to keep the project running and has

organised visits for people to the reserve and educated the public about conservation issues. She is also a representative on the Southland Ecological Restoration Network.

At their property, the couple grow native plants and Mrs Rance holds workshops on topics such as pest control, weed control, growing and cultivating plants and sustainable living. More than 1500 school children had visited the education centre since it opened at the end of 2013, Mr Rance said.

Mr and Mrs Rance were also instrumental in establishing the Otatara Landcare Group and won the Loder Cup - New Zealand's premier award for plant conservation - in 2002.

Otago Daily Times, 1st June 2015

NZPCN Conference 2015

The 2015 conference in Dunedin is shaping up to be an exciting and thought-provoking event. The speaker programme, workshops and field trips have now been finalised and can be viewed on our website at this link: http://nzpcn.org.nz/page.aspx?nzpcn_events_conference_2015. Registration for the conference has been open now for some weeks and registrations have been coming in steadily. The spaces in botanical illustration workshop are now all taken, the photography one is filling steadily and at least one of the field trips is also filling up steadily. Registrations can be completed online by following the button on the home page (www.nzpcn.org.nz).

NZPCN Annual Plant Conservation Awards

The prestigious New Zealand Plant Conservation Network Awards are now in their eleventh year. We are now calling for nominations for the 2015 awards. The purpose of these awards is to acknowledge outstanding contributions to native plant conservation.

The nomination form is available from the Network website

We look forward to your nominations; you can make multiple nominations under

different categories. Anyone is eligible to make nominations, not just Network members. The deadline for nominations is Monday 29 September.

The awards will be presented at the 2015 conference dinner, Friday 30 October, Otago Museum, Dunedin.

Peter Bannister Student Field Grant Awards

Mary Anne Miller

The Peter Bannister Student Field Grant Fund was established 2014 by Jennifer Bannister in memory of Peter Bannister, Professor of Botany, University of Otago 1979-2005. The grant is administered through the Botanical Society of Otago. Grants are awarded to students enrolled for postgraduate degrees at the University of Otago to assist with field-work related expenses. The research projects are chosen on the basis of appropriateness to the objects of the Society, namely to encourage the study and knowledge of botany.

The 2015 Grants were awarded to the following recipients:

Max Buxton (MSc Botany) Project Topic: Are moths the missing pollinators for New Zealand Sub-Antarctic plants? \$500.00 to assist with transport to Enderby Island (part of the Auckland Island archipelago in the Sub-Antarctic) while researching the reproductive ecology of endemic plants.

Esther Dale (PhD Botany) Project Topic: Biome shifts and lineage diversification of New Zealand trees. \$500.00 to assist with transport when collecting outstanding study species, from *Melicytus*, *Myrsine* and *Pseudopanax* genera, at field sites throughout New Zealand.

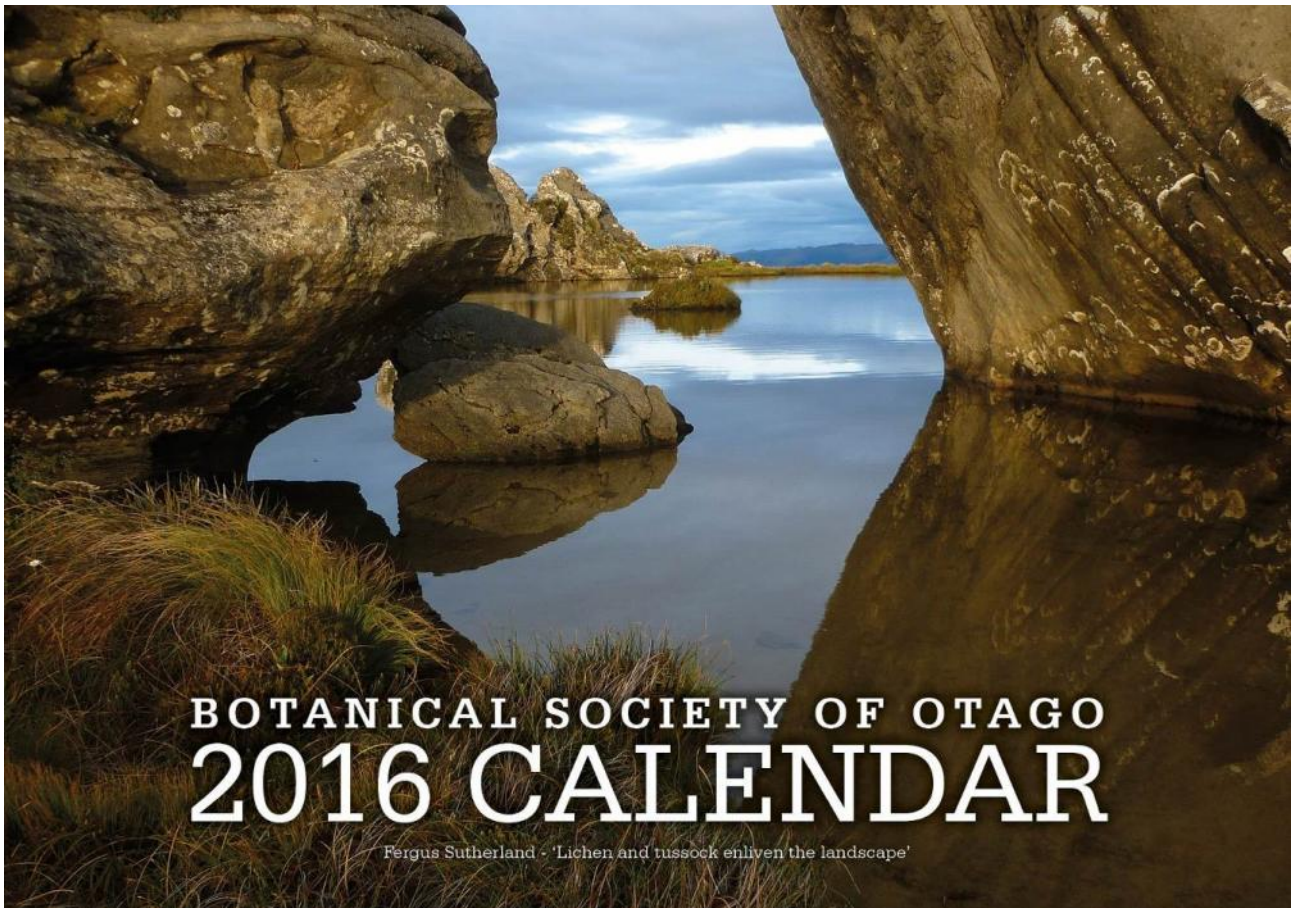
Ian Geary (MSc Geology) Project Topic: Miocene-Pleistocene fossil fruits and wood of northern North Island. \$500.00 to assist with transport when collecting fossil plant samples in the North Island, and when visiting

Queensland to investigate modern affinities for these fossils.

Ben Robertson (PhD Marine Science)
Project Topic: Assessing the trophic status of shallow, tidal lagoon estuaries. \$500.00 to assist with transport to two upper North Island estuaries (Ohiwa and Kaipara

Harbours), both surrounded by urban catchments, to assess the shifting role of seagrass and macroalgae.

Congratulations to Max, Esther, Ian and Ben. We wish all four all the best in their studies and look forward to hearing about their field adventures.



The Botanical Society of Otago's 2016 calendar is on sale now
\$20 ea. (or multiple copies for \$18 ea.)
[add \$2.50 for mail orders]

Available 1 – 3 pm from the Botany Department Reception, University of Otago (cheque or correct amount of cash only) & at Society meetings

For electronic payment email the Botanical Society of Otago (bsotago@otago.ac.nz) with your name, address, and whether you want to collect the calendar from Department of Botany reception or have it posted, and payment details will be sent

All proceeds to the Botanical Society of Otago <http://www.otago.ac.nz/botany/bsotago/>

Get shooting for the 2016 Photographic competition!

The categories are:

Plant Portrait
Plants in the Landscape
Student/First time entrant

Great prizes to be won!

And a chance to be in the famous Botanical Society of Otago calendar!



Myosotis australis; growing on bouldery scree, Rainbow Skifield, photo entered in 2015 competition by Alyth Grant

Articles

Transparency in conservation projects: a case study of *Coprosma wallii*

Luke Easton

Increasing the transparency of study findings, techniques, and/or data between researchers and to the public is an important tool for the conservation management and advocacy of threatened species. Yet often such exchange of knowledge or resources may be limited. For instance, conservation projects may only be produced as internal reports for an organisation or group. Furthermore, researchers may be protective of data that they have collected. This is understandable considering the effort they would have put in to collect it, but some researchers may “sit on” their data for years and not end up doing anything with them. Agreeably, long-term data are essential for conservation, but conservation is a proactive field which requires collaborative effort in order to preserve our unique and threatened species. Thus it is a wonderful opportunity when researchers do end up providing others with a glimpse into their work field.



Figure 1. *Coprosma wallii*. Sourced from: <http://www.nzpcn.org.nz>

Appendices of raw data in published reports are the best way to enhance collaborative investigations with those in a similar field, particularly when multiple levels of data are collected. This gives others an opportunity to then analyse the data in other ways or address other questions which enables a greater picture of the conservation issue to be presented. For example, Parkinson (2008) investigated the recruitment of *Coprosma wallii* at the Paengaroa Mainland Island, Mataroa, in the North Island [the following information is derived from this source and references therein]. *Coprosma wallii* is a threatened divaricate shrub that is distributed in fragmented populations throughout most of New Zealand and it is in decline as a result of recruitment failure, browsing, competition with weeds and habitat loss. The main aim of the project was to assess the level of recruitment and what factors could potentially influence seedling establishment and eventual recruitment. Areas surveyed were the scenic reserve which is largely forested and has been closed to grazing since 1986 and the adjacent railway land which has only been closed to grazing since 1999. Overall, seedling density was found to be low, particularly in the scenic reserve. In the railway site seedlings were only found in areas where recent weed spraying trials had taken place. It was concluded that *C. wallii* requires disturbed, open areas to grow in along with continual weed control for recruitment to occur.

Parkinson (2008) also summarised data from this project and presented them as an appendix to the final report. Interestingly, not all the data collected were analysed or discussed in detail in the report. Data included repeated measures of diameter at breast height (DBH) and the survival of each tree monitored in both the railway and scenic reserve sites. Thus, in order to highlight the importance of sharing information, we analysed this data in R (R Core Team 2013) to determine the

probability of survival of adult trees between sites (binomial model) and the changes in DBH over time (repeated measures model).

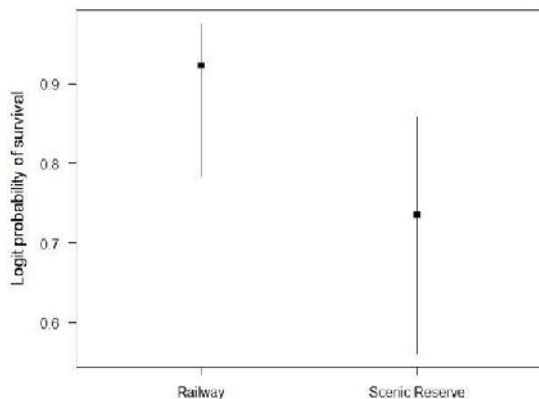


Figure 2. Logit probability of survival for adult *Coprosma wallii* at the railway and scenic reserve sites

The probability of adult survival in the Scenic Reserve was significantly lower than at the railway site (p -value < 0.05, Figure 2). This result is in congruence with Parkinson's remark that conditions in the railway site are somewhat more optimal than the scenic reserve as *C. wallii* may act as an early successional species which requires open areas to grow in. As for the changes in DBH over time, there was no significant difference between sites (p -value = 0.44, Figure 3). This implies that growth patterns are similar regardless of site. Growth patterns were not commented on by Parkinson (2008).

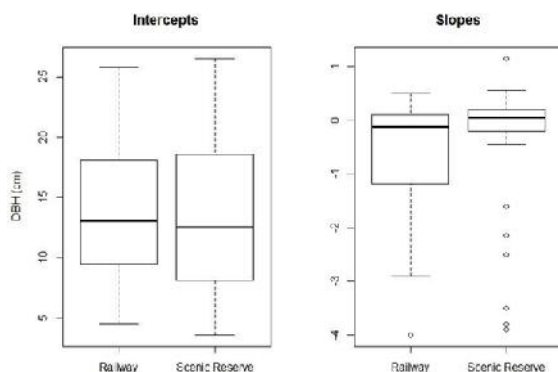


Figure 3. Boxplot of intercept and slope repeated measures estimates for DBH in both sites. There was no significant difference.

Here we have briefly shown that when information is shared, it is possible to enhance our understanding of species ecology and conservation management or provide additional statistical evidence to support conclusions made. We commend people like Parkinson who clearly recognise the importance of collaborative work. It is hoped more people in the future will do the same.

References

Parkinson HM 2008. *Recruitment of Coprosma wallii at Paengaroa Mainland Island*. DOC Research & Development Series 299-304. Department of Conservation, Wellington.

R Core Team 2013. *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, URL: <http://www.R-project.org/>.

Uncinia is now Carex

The following by Jeremy Rolfe is reprinted here with permission from the New Zealand Plant Conservation Network

The Global Carex Group has recently published their findings of a worldwide review of the tribe Cariceae in Family Cyperaceae (Global Carex Group 2015). They argue that the genus *Carex* should be expanded to include the other genera in the tribe, including *Uncinia*, because these genera are firmly nested phylogenetically within *Carex*. Landcare Research botanist Kerry Ford contributed new combinations in *Carex* for the New Zealand species of *Uncinia*. New specific epithets were needed for many of the species because their old names were already in use in *Carex*.

Table: Name changes for *Uncinia*

Old name in <i>Uncinia</i>	New name in <i>Carex</i>
<i>Uncinia affinis</i> (C.B.Clarke) Hamlin	<i>Carex potens</i> K.A.Ford
<i>Uncinia angustifolia</i> Hamlin	<i>Carex minor</i> (Kük.) K.A.Ford
<i>Uncinia astonii</i> Hamlin	<i>Carex hamlinii</i> K.A.Ford
<i>Uncinia auceps</i> de Lange et Heenan	<i>Carex auceps</i> (de Lange & Heenan) K.A.Ford
<i>Uncinia aucklandica</i> Hamlin	<i>Carex aucklandica</i> (Hamlin) K.A.Ford
<i>Uncinia banksii</i> Boott	<i>Carex banksiana</i> K.A.Ford
<i>Uncinia caespitosa</i> Boott	<i>Carex astricta</i> K.A.Ford
<i>Uncinia clavata</i> (Kük.) Hamlin	<i>Carex corynoidea</i> K.A.Ford
<i>Uncinia distans</i> Colenso ex Boott	<i>Carex subviridis</i> K.A.Ford
<i>Uncinia divaricata</i> Boott	<i>Carex edura</i> K.A.Ford
<i>Uncinia drucei</i> Hamlin	<i>Carex drucei</i> (Hamlin) K.A.Ford
<i>Uncinia egmontiana</i> Hamlin	<i>Carex egmontiana</i> (Hamlin) K.A.Ford
<i>Uncinia elegans</i> (Kük.) Hamlin	<i>Carex subtilis</i> K.A.Ford
<i>Uncinia ferruginea</i> Boott	<i>Carex megalepis</i> K.A.Ford
<i>Uncinia filiformis</i> Boott	<i>Carex lectissima</i> K.A.Ford
<i>Uncinia fuscovaginata</i> Kük.	<i>Carex penalpina</i> K.A.Ford
<i>Uncinia gracilentata</i> Hamlin	<i>Carex imbecilla</i> K.A.Ford
<i>Uncinia hookeri</i> Boott	<i>Carex crispa</i> K.A.Ford
<i>Uncinia involuta</i> Hamlin	<i>Carex crispa</i> K.A.Ford
<i>Uncinia laxiflora</i> Petrie	<i>Carex erythrovaginata</i> K.A.Ford
<i>Uncinia leptostachya</i> Raoul	<i>Carex cyanea</i> K.A.Ford
<i>Uncinia longifructus</i> (Kük.) Petrie	<i>Carex longifructus</i> (Kük.) K.A.Ford
<i>Uncinia nervosa</i> Boott	<i>Carex cheesemanniana</i> (Boeckeler) K.A.Ford
<i>Uncinia obtusifolia</i> Heenan	<i>Carex obtusifolia</i> (Heenan) K.A.Ford
<i>Uncinia perplexa</i> Heenan et de Lange	<i>Carex perplexa</i> (Heenan & de Lange) K.A.Ford
<i>Uncinia purpurata</i> Petrie	<i>Carex purpurata</i> (Petrie) K.A.Ford
<i>Uncinia rubra</i> Boott	<i>Carex punicea</i> K.A.Ford
<i>Uncinia rupestris</i> Raoul	<i>Carex horizontalis</i> (Colenso) K.A.Ford
<i>Uncinia scabra</i> Boott	<i>Carex healyi</i> K.A.Ford
<i>Uncinia silvestris</i> Hamlin	<i>Carex silvestris</i> (Hamlin) K.A.Ford
<i>Uncinia sinclairii</i> Boott	<i>Carex parvispica</i> K.A.Ford
<i>Uncinia strictissima</i> (Kük) Petrie	<i>Carex strictissima</i> (Kük) K.A.Ford
<i>Uncinia uncinata</i> (L.f.) Kük.	<i>Carex uncinata</i> L.f.
<i>Uncinia zotovii</i> Hamlin	<i>Carex zotovii</i> (Hamlin) K.A.Ford

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Rolfe, J. 2015: *Uncinia* is now *Carex*. *Trilepidea*, 141:10-11.



Painting of Dracophyllum menziesii by Marcia Dale which will be auctioned at the NZPCN conference.

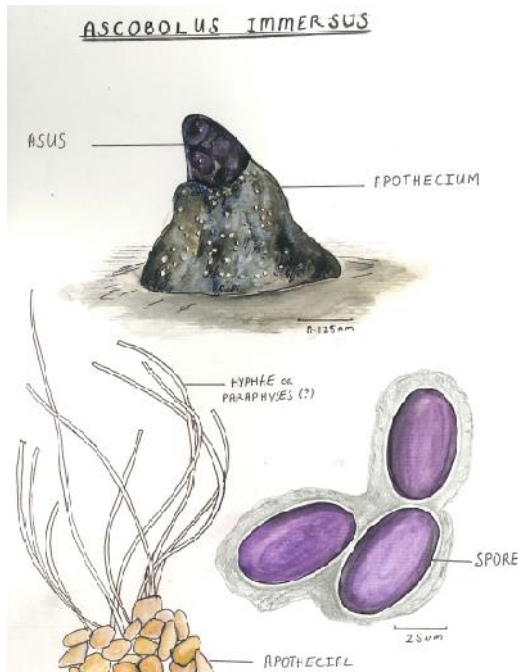
Where there’s muck, there’s magic: the delights of coprophilia!

Milena Janke, Tegan Anderson and John Steel

Messing about in the excrement of various animals may not be everyone’s idea of a good time, but for third year students taking David Orlovich’s third-year Mycology and Plant Pathology paper in Botany, that’s exactly what they will be doing. And you can do it too.

Why would you want to you might ask? I first became attracted to the study of dung when I happened on Ann Bell’s 1983 *Dung fungi: an illustrated guide to coprophilous fungi in New Zealand*, sadly long since out of print, and later came across some curious, orange patches on a cow pat for me to try sorting out.

Milena’s and Tegan’s drawings capture the beauty of these hidden mysteries and give some idea of the great diversity right under our noses. Just place some wet paper towelling on the bottom of a Petri dish or, if you don’t have one of them, a lidded jar will do. Then just wait and watch.

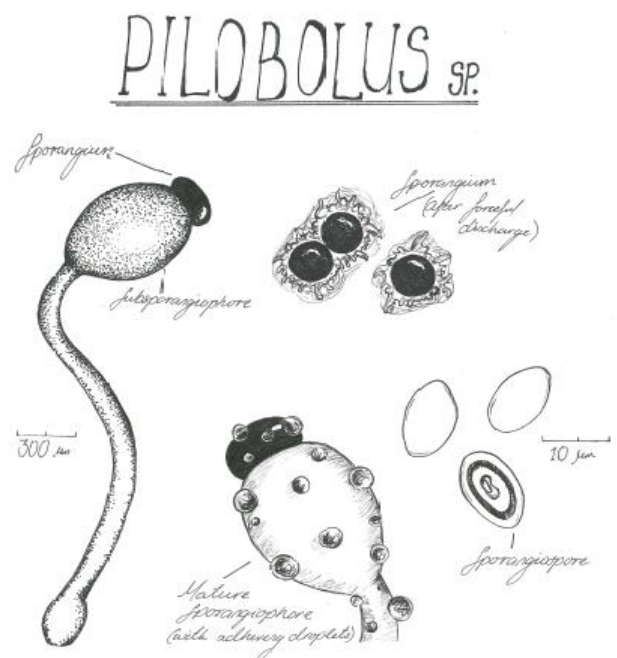


Milena Janke

Among the first to appear will be the glistening pin-like *Pilobolus*, each with a tiny black hat, the spore-containing sporangium atop a hyaline bulb. This bulb orientates the sporangium towards the light and when conditions are right it pops, sending the sporangium off at about 100,000 km/hr! – and that’s fast.

Close inspection might just turn up the tiny apothecia of an *Ascobolus* or similar pimple-like structure almost buried in the substrate. Not quite as obvious or dramatic as the *Pilobolus*, but just as exciting to look at.

It’s a wholly different world down there so next time you’re in the bush, ignore the trees for a minute or two and take the time to check out what you have just trodden on.



Tegan Anderson

Meeting and trip reports

An introduction to NatureWatch NZ, a talk by Jon Sullivan 3rd June 2015

John Barkla

It could hardly have been a worse night for weather as heavy rain and flooding made many of Dunedin's low lying streets impassable. It was inevitable therefore that a smaller than usual group gathered to hear Jon Sullivan talk about the on-line biodiversity recording platform called NatureWatch NZ.

Back in 2005 Jon and other members of the New Zealand Bio-Recording Network Trust built a prototype community nature observation system called NZBRN. With technology changes and a system creaking at the seams the Trust looked internationally for a new system and were impressed with iNaturalist, the brainchild of Nate Agrin, Jessica Kline, and Ken-ichi-Ueda at Berkeley, University of California.

The New Zealand Bio-Recording Network Trust launched its New Zealand optimised blend of iNaturalist in August 2012 as NatureWatch NZ. This includes all of the masses of observations and users from the legacy NZBRN system and links to the New Zealand Organisms Register (NZOR) for a complete and up-to-date list of all New Zealand species.

Jon demonstrated how easily it is to sign up and begin adding observations from nature that can then be shared with other enthusiasts from around New Zealand and the rest of the world. He highlighted several unusual records including new records for New Zealand. For some taxa the only internet images are those lodged in NatureWatch NZ. Jon explained how observations can be grouped together into projects and used the example of the Otago Peninsula Biodiversity Project that several BotSoc members regularly contribute to.

A great feature of NatureWatch NZ is that observers don't need to know the name of the organism they are recording. By posting a photograph of it along with other relevant information, experts from around the world will often be able to quickly assign a name to it and provide helpful comments.

So here's the challenge - many of us have records scribbled in notebooks and photographs languishing on hard drives. How about putting them on NatureWatch NZ <http://naturewatch.org.nz/observations> thereby creating a permanent record that can be shared with other like-minded nature enthusiasts.

Many thanks to Jon for travelling down from Christchurch and giving such a stimulating and enjoyable presentation.

Field trip to Leith Saddle Track, Dunedin, 6th June

Gregory Nelson

The Leith Saddle Track, a 2.8 km long trail that boasts home to nearly pristine native cloud forest – a perfect place to investigate the basal plant groups hornworts, liverworts, ferns and lichens which were the focus of the trip. Due to their small stature, cryptic nature and high density, we only travelled a few hundreds of metres during our three hours on site. Most of our time was spent scouring tree trunks, tree ferns and detritus for these fascinating organisms.

On a cool, June morning, we arrived at the head of the Leith Saddle Trail to find the ground and ground-cover plants coated with a light dusting of frost. While we waited for the morning to warm, we warmed up our plant ID skills along the trail. *Acaena anserinifolia* was ubiquitous on the trailside throughout the day. We noted several species of coprosma, including *Coprosma rugosa*, *C. dumosa* and *C. rhamnoides*, as well as others and were able to spot some small inconspicuous flowers on a few individuals. Also worth noting were the many tree fuchsia, *Fuchsia*

excorticata, along the trailside and in the bush.

After sunning, we delved deeper into the bush. We clustered round a well of piped water, adjunct to a small stream. In this damp habitat we found an incredible diversity of microflora. John Steel gave a brief introduction of the differences between the lichen, liverwort, hornwort and moss groups and important features to look for in regards to each, after which he set us loose. Briefly, lichens are fungal-algae/cyanobacterial mutualists that can be differentiated by their crusty, chitinous exterior. Liverworts and hornworts have three rows of flattened and often lobbed leaf-like structures which do not have veins, whereas mosses grow as small stems with leaf-like structures arranged analogously to a whorl which do contain veins. Hornworts only have two very large chloroplasts per cell. Although these guidelines provide a good heuristic tool, it is important to note that there are always exceptions. Armed with collection bags and hand lenses we hunted for anything small and interesting.



Figure 1: Close up of a filmy fern (*Hymenophyllum* sp.) which is distinguishable by its sori, the reproductive features which are spherical and can be found anywhere along the frond. Where the sori are found is a feature used for species identification.

We observed many lichens, mosses and liverworts and tried to apply our identification skills. We found numerous cyanobacterial (blue) and algal (green) lichen, including the

fruticose *Cladina* and foliose *Pseudocyphellaria* species. There were many cute mosses including some umbrella moss (*Hypopterygium* sp.). Both leafy (*Jungermanniiidae*) and thallus (*Marchantiidae*) liverworts were abundant. Along with the lower plants we were able to spot some fungi, including some slime moulds, Basidiomycetes and a *Clavulina* coral fungus. Also spotted were a number of filmy ferns (*Hymenophyllum* spp.) which can be distinguished by their sori reproductive structures. We filled our collection bags and brought samples back to the Botany lab for closer analysis. Under the scope and with identification books we were able to look at the differentiating features more closely and get corrected identifications on some of the tricky specimens. Among these were the Pallavicinaceae liverworts which have a midrib. We were also able to take some close up pictures of our specimens.



Figure 2: Close up of foliose algal lichen (*Pseudocyphellaria* sp.) which is distinguishable by its hard chitinous exterior and reproductive apothecia (dark spots).

Training our eyes to focus on the smaller things took a little work, but the reward was well worth the effort. Basal plant groups and their allies display a wide diversity of morphology, colour and ecology which offer a wealth of visual and theoretical stimulation. Equipped with a new eye for these sometimes cryptic beings, I'm happy knowing that I won't have to walk far to see something interesting.

Field Trip to Bethunes Gully and Mt Cargill, 4th July, 2015

Kate Caldwell

The winter months are a good time to keep Botanical Society excursions close to home, so for July's field trip we explored the plant communities on that old familiar landmark, Mt Cargill.

Gathered at Bethune's Gully on Saturday 4 July were Moira Parker, Esther Dale, Greg Nelson, John Steel, Kate Caldwell, Allison Knight, Bronwen Strang, Robert Smith, Jim Fyfe, Yuan Lu, Sissi Wang, Robyn Bridges and David Lyttle.

The fleeting opportunity to take a photo of the whole group at the outset was unfortunately squandered. Botanising began in earnest as we flowed, in the opposite direction of Lindsay creek, towards the base of the hill. The track was festooned with yellow poplar leaves from the old deciduous trees in the reserve.



Photo: The Douglas fir plantation (by Kate Caldwell)

After pausing to appreciate these tree skeletons, and the mixture of moisture-loving herbs at the track sides, we headed up the brae, passing through the impressive stand of Douglas fir trees that gives the lowest section of the Cargill walk its distinct character. The trees, planted in the 1930s, provide a canopy for a dense mixture of exotic and native species. Having John Steel's species list to tick off was a great excuse to take a closer-than-usual look at this regenerating vegetation. In the filtered light and damp soil, wineberry (*Aristotelia serrata*), marble leaf (*Carpodetus serratus*), tree ferns (mainly *Cyathea smithii*), *Astelia fragrans* and other natives compete courageously with weeds like Himalayan honeysuckle (*Leycesteria formosa*), male ferns (*Dryopteris*) and blackberry (*Rubus fruticosus*).

Beyond the fir trees, the native plants hold court again, each species now looking less cramped in its niche in the forest. The trickling streams and cut track sides were lined with a rich selection of ferns and bryophytes. Coprosma leaves, like dots in the air, caught the winter sunlight. I watched a tiny warbler flit from mahoe, to lemonwood, to broadleaf. Filling in the gaps were plenty more plant species to tick off the list - various tree ferns, climbing rata, leathery *Pyrrrosia*, feathery *Leptopteris*, plasticity *Blechnum colensoi*, and a *Hymenophyllum* or two.

Soon the first tall podocarps appeared, poking their heads out into the sun. Weeping rimu, red-draped miro, a massive matai with its hammer-marked bark. There was a bit of wind damage around and plenty of evidence of possums.

One of the jewels crowning Dunedin's main hills is the mountain cedar (*Libocedrus bidwillii*). The cedars begin to appear as you approach the tree-line - in all stages of life, from soft-leaved seedlings, to neat, conical saplings, to ancient stately beauties full of bonsai-like character. And then there are the distinctive, long-dead trunks that dot the upper forest and shrublands. They are

bleached by the elements, but still standing tall and straight due to their resistance to decay and burning. The dead cedars whisper the story of a huge fire that raged across these hills back in 1914, threatening to take out North East Valley before a change in the wind stopped the flames from reaching the city.

Baby inaka (*Dracophyllum longifolium*) began to appear at the track sides, a sure sign for any southern tramper that she is soon to pop out of the forest into the light. We began to see a new selection of shrubs like *Olearia arborescens*, *Gaultheria antipoda* and *Phyllocladus alpinus*. *Coprosma* sp, *Raukaua simplex* and some lovely, dense specimens of *Myrsine divaricata* further decorated the scene. Club mosses (*Lycopodium volubile*) scrambled through lancewoods or crept along (*L. scariosum*) or hugged the ground (*L. fastigiatum*). I got my eye in for the gorgeous mountain tree fern, *Cyathea colensoi*, with its trunkless form, finely hairy fronds and bold, rust-coloured midribs.



Photo Raukaua simplex (by Kate Caldwell)

The last part of the track to the summit had plenty of tiny taoka to discover in smaller and smaller patches and saw some of us adopting the classic botanist pose to take pictures and examine the miniature plant communities containing *Nertera*, *Gunnera monoica*, *Gaultheria depressa* and cryptic cryptogams.

This winter has been a harsh one, even for the cold-loving species on Mt Cargill, and a few of us wondered how much of the extensive dieback on the plants at the track edges was caused by frost and wind damage, and how much was helped by the hands of man. In some sections of the track, the curled and

dead foliage on some of the plants certainly suggested the over-zealous use of herbicides, and this horticulturist couldn't help but notice that that a few cringe-worthy pruning decisions had been made.

The group had well and truly spread out by now, some having turned back to pursue other Saturday afternoon activities which is fair enough because the walk took us a few hours longer than it would have for your average dog-exerciser or weekend wanderer. There were plenty of pauses along the way to observe, photograph, share knowledge, peruse field guides and keys, tick off species lists, or just enjoy a fresh look at this well-trodden route.



Photo Lycopodium volubile (by Kate Caldwell)

The remaining botanisers coalesced at the summit, taking a few minutes to enjoy the view and compare notes. This earnest list-ticker zipped up her jacket, took a couple of snaps, and resolved to take a closer look at the windswept coprosmas sharing this ridgetop on some other day.

Thank you to everyone who came along, for sharing your knowledge, stories, enthusiasm and company.

For a plant check list for the trip contact John Steel (john.steel@otago.ac.nz)



Photo the view from the summit of Mt Cargill (by Kate Caldwell)

Hereweka/Harbour Cone Block, Otago Peninsula, 2nd August 2015

Moira Parker, David Lyttle and Mary Anne Miller

The rain stayed away and the sun shone when six members visited Hereweka/Harbour Cone Block on Otago Peninsula. For three - Moira Parker (our guide), David Lyttle and Alf Webb - the site was familiar but for the others (Mary Anne Miller, Robyn Bridges and Gretchen Brownstein) it was a new Peninsula experience.

A slice of local history may help understand the reasons why this block, which incorporated at least seven family dairy farms, is of interest. When Europeans first arrived in Otago the Peninsula was mostly bush. Gradually it became farmland with three creameries close to the block. Later, improvements in road transport meant milk could be taken directly to Dunedin. Eventually dairying became uneconomic and was replaced by sheep farming. The conversion from native bush to farming saw only struggling remnants of bush remain. This was not solely due to pests, but also because kowhai (*Sophora microphylla*) and broadleaf (*Griselinia littoralis*) were used for firewood, house piles, fence posts and rails while the podocarps (miro, matai, rimu, totara and kahikatea) were milled for timber.

This 328 hectare block of land was purchased by the Dunedin City Council in 2008 and a Management Plan was prepared in 2012. Most of the land is leased for sheep grazing, but two significant areas have been retired from pastoral use so native forest can regenerate. Planting programmes have also been initiated by the community. The recent 100 year rain event has left the local landscape quite scarred and although there was some damage on Hereweka it seems to have survived the deluge well.



View of Peggys Hill and Stewarts Creek. The first site visited is on the upper right above Highcliff Road. The second site is just visible in the lower right hand corner of the photo

The eastern side of Peggys Hill is essentially a landslide scarp. The upper part of the hill has mostly fallen away leaving a steep, bouldery slope that is covered with a fragment of the original forest. The lower, less steep part of the slope was cleared for farming and is still an active landslide that

periodically slips on to Highcliff Road. The forest is dominated by broadleaf (*Griselinia littoralis*), tree fuchsia (*Fuchsia excorticata*) and whiteywood (*Meliclytus ramiflorus*). Broadleaf is especially important as the massive old trees support a heavy growth of epiphytes which is an unusual feature of this bush fragment. This epiphyte flora provided the major interest for the day. The ferns *Microsorium pustulatum* and *Asplenium flaccidum* were common as was the small rata vine *Metrosideros diffusa*. Both species of *Earina* orchids recorded from the Otago Peninsula, *Earina mucronata* and *Earina autumnalis* were observed in healthy quantities. The latter species is usually epiphytic on rocks but in this case one particularly vigorous plant was found flourishing on a broadleaf tree. However, the most exciting discovery of the day was a very healthy clump of *Tmesipteris tannensis*, which had not been recorded in previous species lists. Further additions to the list were *Phlegmariurus varius* (= *Huperzia varia*) and the two species of filmy fern, *Hymenophyllum sanguinolentum* and *Hymenophyllum demissum*, all very rare on the Otago Peninsula.



Tmesipteris tannensis, epiphytic on trunk of broadleaf. Although this species is frequently found on the higher hills north of Dunedin it is almost totally absent from the Otago Peninsula. (by David Lyttle)

A single miro (*Prumnopitys ferruginea*) is present on the upper margin of the forest growing alongside a large totara (*Podocarpus hallii* which has undergone yet another name change and is now *Podocarpus laetus*). These two trees probably escaped being cut

down due to the inaccessibility of the site. *Pennantia corymbosa*, a tree that is not common on the Otago Peninsula, is also present.

On the southern edge of the block where our exploration began we saw signs that possums are active in the bush, but it is hoped these pests will disappear over time with results showing up in the Otago Peninsula Biodiversity Group's Pest Free Peninsula monitoring where since 2009 they have employed the Foliar Browse Index on selected trees to judge the success of their possum eradication programme. Characteristic signs of possum browsing were found on *Schefflera* where the animals selectively remove the leaves, eat the base of the petioles and discard the major part of the leaf. The other major animal pest, hares, are being discouraged from spoiling young plants, particularly *Sophora microphylla* and *Griselinia littoralis* which they are particularly fond of, by the use of protective mesh. *Tropaeolum speciosum* (Chilean flame creeper) is top of the pest plant list and is the only weed to be actively eliminated although gorse and broom come in for attention under the annual management programme.



A heavy carpet of epiphytes on a broadleaf (*Griselinia littoralis*). The orchid (*Earina mucronata*) is prominent together with the ferns (*Asplenium flaccidum* and *Microsorium pustulatum*) The small rata vine *Metrosideros diffusa* is present as well. On the left is the solitary miro (*Prumnopitys ferruginea*) growing at this site. (by David Lyttle)

There were several encouraging signs that forest regeneration is well underway. Since the area was fenced and stock excluded, ferns are now abundant. The bush is naturally extending as seen by young *Coprosma rugosa*, *Hebe salicifolia*, *Coprosma tayloriae*, *Coprosma rhamnoides* and *Melicytus ramiflorus* round the edges. *Melicytus lanceolatus*, noted by Martin in 1962* as being present on Mt Charles, is doing well in recently planted areas. *Melicytus lanceolatus* planted on Peggys Hill was grown from seed collected in the Silver Peaks by Bill Wilson. Within the bush there were plenty of *Pittosporum eugeniodes*, *Aristotelia serrata*, *Schefflera digitata*, *Pseudopanax crassifolius* and *Griselinia littoralis* seedlings. Lunch was taken on the top side of the bush with spectacular views out to Taiaroa Head and of the Peninsula coast to south and east.



Schefflera digitata, young plants regenerating in damp gully now stock has been excluded. (by David Lyttle)

In the afternoon three of the party visited another forest remnant in the upper part of Stewarts Creek. Again, a small relict patch of forest has been preserved on a slope by virtue of it being too steep to farm. The site is lower and drier than Peggys Hill and is dominated by shrubby coprosmas (*Coprosma rigida*, *Coprosma crassifolia*, *Coprosma areolata*) with kowhai (*Sophora microphylla*) and ribbonwood (*Hoheria angustifolia*) being the dominant tree species. In the bottom of the gully amongst the boulders at the toe of the slope we found *Australina pusilla*, a small creeping herbaceous plant belonging to the nettle family. A further chance discovery higher up was an Otago Peninsula rarity, the

perching orchid, *Dendrobium cunninghamii* (= *Winika cunninghamii*).

While it is gratifying to record several rare plants from a single site, all these plants one must consider that in the past these plants must have been more widespread on the Otago Peninsula. The fact that these plants have survived in these small relict patches of forest is purely a matter of chance and a matter of concern. As the numbers of individual plants for each species in this category is very low (perhaps one - two individuals) the continued survival of these species will require careful management to preserve the existing biodiversity of the Hereweka/Harbour Cone Block.



Lunch with view: From left to right: David, Alf, Robyn, Gretchen and Mary Anne (Photo by Moira Parker)

References:

Peter Johnson 2004, *Otago Peninsula Plants An annotated list of vascular plants growing in wild places* Save the Otago Peninsula (STOP) Inc., Portobello.

Natural History of the North Andean High Mountains, Talk by Robert Hofstede, 1st July, 2015

David Lyttle

Robert Hofstede a visitor to The Department of Botany and consultant to international organisations in tropical nature conservation and environmental policy gave a talk at July's meeting entitled, Natural History of the North Andean High Mountains: the Most Diverse Alpine Ecosystems on Earth.

Robert talked about the páramo ecosystem of the northern Andes, a neotropical, tussock grass and herb-dominated ecosystem above the natural tree found in Venezuela, Colombia, Ecuador and northern Peru. As in New Zealand, tectonic uplift of the land in relatively recent geological times led to the formation of the Andean mountains. Apparently, the main river drainage originally flowed to the north through what is now the Orinoco Basin until mountain uplift forced it to the east to form the present day Amazon basin. An interesting alpine flora evolved that had both tropical and temperate (holarctic and austral-antarctic) origins. This flora contains many unusual plants some with features shared with the New Zealand alpine flora. In one example the genus, *Espeletia* (Asteraceae), has diversified into a range of curious and bizarre species (“*celmisias* on a stick”) though in some respects they look like a cross between a *Celmisia* and *Dicksonia fibrosa*. As an adaptation to extreme temperatures, the dead leaves are retained, insulating the rosette stems which protects them from freezing. The flora is very rich and diverse reflecting its varied origins and Robert showed pictures of many different plants, some recognisable as belonging to genera present in New Zealand, others belonging to Northern hemisphere genera familiar to alpine plant enthusiasts, and others totally unrecognisable.

Páramo is connected to the high mountain (cloud) forest through a broad ecotone; both are of key importance for the ecology and society of the Andean countries because they form the sources of, and therefore regulate, all major hydrological systems including part of the Amazon watershed. Páramo ecosystems have been subject to human disturbance and habitat destruction over hundreds, or perhaps thousands, of years. Robert ended his talk by outlining the conservation issues that impacted on the páramo as it is subject to encroachment by agricultural development (mainly cattle farming). He spoke about his work looking at the impact of climate change on the páramo, including biological,

geographical and socio-cultural aspects affecting the people living there.

Overall an excellent and very interesting talk about the botany and cultural aspects of a part of the world that few of us knew anything about.

Members Botanical "Show and Tell" Evening August 19th 2015

David Lyttle

The brief for BSO Botanical “Show and Tell” meetings is, “plants or any plant related object that has a story attached”. Items may be short slide shows, books or photographs. “Show and Tell” has proved very popular on the occasions it has been held and never ceases to intrigue and surprise with the variety and novelty of the items presented.

Lala Fraser presented a puzzle: a dead *Pittosporum tenuifolium* from a recent restoration planting at Smiths Creek behind Broad Bay. Various suggestions were offered as to the cause of its demise, but a consensus was eventually reached; that the roots had rotted due to it becoming waterlogged following the June rainstorm.

Our guest from Christchurch, Stuart Murray, is a skilled grower of alpine plants which are challenging subjects to retain in cultivation. He has systematically experimented with growing conditions and formulated potting mixes that support the growth of these difficult subjects. Stuart showed us some New Zealand alpine plants from his collection; *Leucogenes grandiceps*, *Raoulia loganii*, *Celmisia hectori* several *Celmisia* hybrids. All these plants were thriving and in magnificent condition.

The Aramoana salt marsh is listed as an area of Significant Conservation Value in the Dunedin City District Plan. It is considered to be of international/national significance. Bradley Curnow has campaigned passionately for more effective protection for Aramoana in the face of thoughtless and casual vandalism through inappropriate use of motor vehicles

on the salt marsh. Bradley showed an aerial photograph taken from a drone that showed the true extent of the damage caused to the salt marsh by the tracks of motor vehicle.

Alan Mark built a snow-fence in 1959 on the Old Man Range, Central Otago, to determine if it was possible to trap snow and increase water yield for hydroelectric generation. The fence was built out of rimu that over the years has been weathered and abraded to its present silvery colour and condition. It is possibly the oldest continuously monitored snow fence in the world. Climate data has been collected throughout this period and changes to plant community structure and composition monitored. As snow cover is protective, changes in the vegetation composition have been seen with snowbank plants establishing on this formerly exposed and frost prone site. The scientific observations taken continuously from this site for a period of 56 years constitute a unique and valuable record of climate variation and vegetation change during that period.

Welwitschia mirabilis is a distinctly odd plant found in the Namib Desert of Namibia and Angola. It is placed in its own family Welwitschiaceae in the gymnosperm order Gnetales. John Barkla showed us pictures of this remarkable plant. It has only two leaves. These are massive and grow continuously throughout the lifetime of the plant splitting and becoming frayed as they age. *Welwitschia* is dioecious with the male and female reproductive cones being produced on separate plants. Apparently, for such a specialised plant it is not particularly difficult to cultivate. John remarked it was doing better in Angola than in Namibia; land mines remaining after the 30 year civil war make it unlikely the plants growing there will be disturbed. For more information about this fascinating plant see <http://www.kew.org/science-conservation/plants-fungi/welwitschia-mirabilis-tree-tumbo>

Kate Caldwell presented an unknown daisy with large leaves from Woodhaugh Gardens. It was found growing in the understorey,

looking leggy and out of place. She thinks it is an endemic, *Brachyglottis hectorii*, from the limestone areas of northwest Nelson. And thought it had been planted by the original gardener.

Allison Knight displayed a painting of *Lichenomphalia*, painted by Marcia Dale that was presented to her in recognition of her efforts in producing, *Lichens of New Zealand: An Introductory Illustrated Guide*, and for her generous donation of the proceeds from its sale to the BSO. *Lichenomphalia* is unusual in that it is a lichen genus where the fungal partner is a basidiomycete rather than an ascomycete as is the case for the majority of lichens. Jerry Cooper has determined that all the historical names used for the New Zealand species are incorrect being based on Northern hemisphere species and we have a number of undescribed ones. Jerry has requested that people collect material and forward it to him so that he might revise the genus in New Zealand. For more information on this and other mycological topics see Jerry's Journal

<https://www.inaturalist.org/journal/cooperj>

The final "Show" of the evening was the public unveiling of a painting of *Dracophyllum menziesii* by Marcia Dale. The painting is a magnificent portrayal of this plant and will be auctioned in October at the NZPCN Conference with the proceeds to be donated to the NZPCN and the BSO.

Geoff Baylis Lecture 2015: The discovery of slowness: life in the plant lane, 9th September, 2015

Gregory T. Nelson

On Wednesday, September 9th, Head of the University of Otago Department of Botany Steven Higgins delivered the 13th annual Geoff Baylis lecture to a pensive and diverse crowd. In keeping with Professor Geoff Baylis' demeanour the talk was thoughtful and provided insights into the lives of plants. Following Professor Baylis' perceptiveness, the talk discussed the evolutionary history of plants and how they have shaped the Earth's

environment as well as how changing environments have altered vegetation dynamics in turn. Perhaps most topical, and resonant with Professor Baylis' conservation ethic, was a plea for using plants as canaries in the coal mine of climate change. The talk provided substantial justification for why studying plants is not only exciting, but also fundamental in our understanding of the natural world.

Steve's introduction was all about proving that plants are the coolest things around. Plants can be absolutely massive (*Sequoiadendron giganteum*; up to 2100 tonnes), astoundingly old (*Pinus longaeva*; up to 5065 years old), incredibly tall (*Sequoia sempervirens*; up to 115.5 m tall), eat sunlight and helped form the Earth atmospheric composition. Despite this, they often go underappreciated by people at large and are seen largely more as commodities than wonders. This may be because they are more difficult to relate to than cute fuzzy animals and part of this estrangement stems from their slowness. Steve's theme was that plants do most things that animals do; they just operate on a different time scale. He elucidated this assertion with a few striking examples.

Most pointedly, Steve suggests that plants developed the first local area network. A common strategy by plants in response to herbivory is the production of secondary metabolites that reduce their palatability or even make them toxic at high doses. In Africa it was shown that this response was also induced by neighbouring plants, even if they hadn't been nibbled on. It has been shown that these plants release volatile compounds to alert their compatriots to danger, a behaviour observed in many animals. The response was so strong that it caused death in kudu antelope eating too many of the heedful plants. More generally, these defensive reactions can accumulate to regulate herbivore populations from the bottom up. Steve's example depicted cycles of vole populations and silica content in grasses – in response to increasing vole densities the

grasses increased their silica concentration making them less palatable and reducing food availability for voles thus driving vole densities down. These tales clearly demonstrate that plants are perceptive and reactive in ways that are sometimes difficult to perceive. Another method of depicting this is comparing the vegetation of historic landscape photos with current ones. By viewing things through a long term lens we are able to see striking shifts in landscapes as plants duke it out for space and resources which we would not notice over human time scales. Clearly plants are active agents in their survival and do much more than sit around looking green.

Finally, Steve showed how plants can be useful indicators of change in light of climate change. By using satellite imagery technology to measure greenness around the globe, Steve and his colleagues have demonstrated that there are global shifts in growing seasons with patterns often being consistent within biomes. This suggests that plants can be useful indicators in understanding the climatological shifts occurring due to anthropogenic influence making understanding their responses useful in choosing informed management decisions. This also brings the scientific study of plants into the realm of formulating pragmatic allocation plans of limited resources in response to climate change.

With lucid prose and exposition Steve made a compelling case for the study of plants being not only fascinating, but also critical in building our comprehension of our world about us. Plant biology has already provided insights into ecological theory, chemical processes and evolutionary dynamics. As we look to the future, plants will continue to provide valuable biological discoveries and increasingly important climatological cues, a continuing effort that Professor Baylis would have wholeheartedly supported.

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Please submit copy for next newsletter to Marcia Dale by 15th January 2016

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Lichenomphalia alpina, painting by Marcia Dale (photo by David Lyttle)



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