BOTANICAL SOCIETY

OF OTAGO

Newsletter Number 71 February 2014

BSO Meetings and Field Trips

Wednesday 19th February 5.20 pm Climate Change: Impacts on Plants and Ecosystems in the Arctic.

Ulf Molau is a Professor in the Department of Biological and Environmental Sciences at the University of Gothenburg. He is also a member of the Intergovernmental Panel on Climate Change (IPCC) and one of the researchers behind the IPCC's latest report. His research documents the effects of the rapid changes happening in the Arctic and the alpine parts of Northern Swedish Lapland on the plants and fragile ecosystems, and the global implications of this. The key driver is the ongoing warming, causing a vanishing "cryosphere" detected as permafrost thawing and reduced snow cover duration, with cascading effects on hydrology and ecosystem services. Much of this is recently published in the Arctic Resilience Report, an assessment ordered by the Arctic Council (the report can be downloaded at http://www.arctic-council.org/arr).) We are extremely lucky to have an international speaker of such high calibre to kick-start our 2014 presentations.

Saturday 22nd February 7.30 am Trip to Omaui, Invercargill

Exploration of a dune and shore community with Brian Rance, DOC, Invercargill. We are fortunate to have the services of Brian as our guide as he is very knowledgeable about the plants and ecosystems of the Southland region. The walk would include the Three Sisters Dune (with several threatened plants including the only remaining mainland site of *Gunnera hamiltonii* (status - Nationally Critical), and 20 other threatened or uncommon species!). We could also look at the coastal turfs towards Barracuda Point. We need to leave Dunedin early to make the most of the day so meet at 7.30 am at the Botany Department car park in Great King Street. If you wish to come please contact David Lyttle, phone:(03) 454 5470 email:djlyttle@ihug.co.nz so we can arrange transport.

Wednesday 19th March 5.20 pm Botanising in the Miocene

Jennifer Bannister is a Research Associate in the Department of Botany. She studies plant macrofossils from sites in Otago and Southland in collaboration with Daphne Lee's palaeobotany research team in the Geology Department. A maar lake deposit of laminated diatomite has provided a wealth of evidence for a warm temperate/subtropical rainforest in Otago in the early Miocene. Fossil leaves, flowers, pollen, fruits and insects provide an amazing window into life in the surrounding rainforest. Jennifer prepares cuticles from fossil leaves and reference leaves and uses both cuticle and leaf features to help identify the fossils. New Zealand has some of the best preserved Cenozoic plant fossils in the world and this research is yielding exciting results with many papers and conference presentations. It is very impressive how much one retired member with a microscope, plenty of hydrogen peroxide and much ingenuity and perseverance can transform our understanding of the past. Jennifer gave the 2013 Lucy Cranwell Lecture to the Auckland

Botanical Society: for more details see: http://www.aucklandmuseum.com/whats-on/members/past-events-lectures/botanising-in-the-miocene

Saturday 22nd March 9 am Hands-on Botanising in the Miocene!
Palaeogeologist Daphne Lee and palaeobotanist Jennifer Bannister will take us to collect fossil leaves from a Miocene forest at a site in Central Otago. Meet 9am at the Botany Department car park, 464 Great King Street to car pool. Return by 5 pm. Bring hand lens, a pocket knife, chisel or rock hammer, protection from the sun, lunch and plenty to drink. Contact Allison Knight: (03) 487 8265, email: alli_knight@hotmail.com Rain date Sunday 23rd March.

Wednesday 9th April 5.20 pm BSO AGM and Photographic Competition
A popular and eagerly anticipated event for anyone interested in Botanical photography. Learn what makes a good photograph and how to improve your photographic skills from our panel of expert judges. The best photographs will be chosen for the BSO Calendar so this is you opportunity to have one month of fame. Start organising your entries now and don't wait until the last minute.

Saturday 12th April 8 am Field trip to Gard Road Reserve, Waitaki Valley
Come and see one of our newest conservation reserves at Gard Road in the Waitaki Valley. This limestone escarpment is full of botanical treasures including rarities like *Carmichaelia hollowayi*, *Lepidium sisymbrioides*, *Raoulia monroi* and *Muehlenbeckia ephedroides*. There are also wonderful fossils to discover - all with a backdrop of the St Marys Range. Much work has already been done to remove boxthorn that threatens the cliffs and special plant habitats. We may assist with this and other conservation-related tasks. Meet 8am at Botany Department car park, 464 Great King Street. Return 6 pm. Contact John Barkla, phone (03) 476 3686, email: mjbarkla@xtra.co.nz.

Wednesday 21 May 5.20 pm Botanical Show and Tell
This is your night to bring along items of botanical interest to the monthly meeting and talk about them. Items might include short slide shows, books, photographs, plants, or any plant related object that has a story attached. Poems and songs welcome too. We'll also have a sale table for plants or other items you'd like to donate to the Society for sale to members.

Saturday 24th May 9.30 am Field Trip to Split Rock.
Split Rock is a basalt outcrop on private land to the north-east of Seacliff. It is surrounded by a highly modified podocarp/broadleaf forest remnant which supports *Asplenuim hookerianum*, *Acaena juvenca* and *Pterostylis* spp. in the understorey. The lichen flora is interesting in that a number of predominately corticolous (bark-living) species form saxicolous (rock-living) communities. The view from the top of the outcrop across the greater Blueskin Bay towards Matakaea/Shag Point is impressive on a clear day. Wet weather plan is to visit the Truby King Reserve in the former grounds of Seacliff Hospital. Meet 9 am at the Botany Department car park, 464 Great King St. to car pool. Return early afternoon. Leader Maia Mistral, (03) 465 8299 evenings – or leave a message.

Wednesday 4th June 5.20 pm Fabulous Fungi from Golden Bay
Dr David Orlovich, Botany Department University of Otago will be talking about the 2014 Fungal Foray to be held in May at Pohara, Golden Bay. The annual Fungal Foray always produces some interesting finds and the photos alone make attending this talk worthwhile.

Saturday 7 June 9 am Field Trip to Tavora Reserve
We'll look at the sand dune of the Tavora Reserve. This was marram-dominated, but the Yellow-eyed Penguin Trust have been planting pikao and other native dune species, which has worked quite well. We'll look at the podocarp / broadleaved forest of Goodwood Scenic Reserve, one of the very best remaining remnants of coastal forest in East Otago. The Trust have also been doing restoration planting along the stream that leads to the dunes, and along a corridor from Goodwood reserve to the sea. Leave 9 am from the Botany Department car park, return mid-late afternoon. Rain date Sunday at 12 noon. Leader Bastow Wilson, 4 728 999 or 021 144 8228, or bastow@bastow.ac.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 Captain Cook Hotel. Use the main entrance of the Benham Building to enter and go to the Benham Seminar Room, Room 215, 2nd 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. 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/.

Contents

Chairman's Notes

David Lyttle

We ended last year on a high note with a very successful and enjoyable trip to Mt Kakanui. We were fortunate to be given permission by Mr Logan Dowling of Longlands Station to use a farm track to gain access to the Mt Kakanui DOC reserve and what had the potential to turn into a logistical nightmare turned out right on the day as there were enough 4WD vehicles and drivers available to transport everyone up the mountain.

The first trip this year is in February to Omaui near Invercargill which is another area of high botanical interest. We are fortunate in Otago to be close to so many places that have unique flora and fauna that are freely accessible to groups like ours. Often it requires a little bit of planning and some driving to get there but the rewards are certainly worthwhile.

In November I had the good fortune to see *Pimelea sericeovillosa* subsp. *pulvinaris,* a species listed as declining, in flower near Tarras on a site that could have easily been lost to dairying or horticultural development. Although we are not primarily an advocacy group for environmental causes I believe we have a responsibility to promote the protection of rare and threatened indigenous plants and ecosystems. To this end several of us made a submission to the Draft Otago Conservation Management Strategy late last year. I am pleased to say that we were able to draw the attention of DOC to the nationally critical lichen *Ramalina pollinaria* growing adjacent to the track at Trotters Gorge; a small step, but hopefully a constructive one that will assist in preserving threatened elements of our indigenous biota.

Again in November, I managed to photograph the cryptic buttercup *Ranunculus crithmifolius* flowering on Little Omarama Saddle. It flowers very early in the season and I have missed it in the past. Those of you who are familiar with this species will know that although it is quite widespread it is often overlooked due to its remarkable ability to blend in with the scree patches on which it grows. I am hoping the photo will have sufficient merit to impress the photo competition judges and appeal enough to the calendar compiler to feature for the month of November 2015. To that end I would urge all BSO members to go out and participate in the activities of the Society and take photos so our calendar continues to be one of the best natural history calendars produced in New Zealand.

Secretary's Notes

Allison Knight

As usual, the bulk of our mail consisted of news and newsletters from other Botanical Societies and botanically related groups. Increasingly, these come in electronic form and they could be scanned or printed. Bastow has agreed to co-ordinate them, bring the printed versions to meetings and offer members the chance to opt in to an email list to be forwarded such news. There are lots of interesting snippets from around the country. An increasing number of newsletters aimed at non-profit organisations also need to be dealt with. Of more specific local interest were two lichen-related letters. The first was from a Peninsula resident asking how best to deal with all the lichens on his roof—the air must be low in pollution and high in nitrogen out there! The second was a very encouraging one from DOC, asking how best to preserve the rare and threatened *Ramalina pollinaria* at Trotters Gorge. It's good to see our submissions and newsletter articles resulting in some positive action! Most excitingly, quotes have been flying back and forth for the printing of the Introductory Guide to Lichens which is being published using the BSO Audrey Eagle Publishing Fund and should be available by the end of January – see order form.

Message from the Treasurer

Mary Anne Miller

Because of a predicted deficit in the 2014 financial year, and the possibility this could be the case in following years mainly due to increased printing and mailing costs, the BSO Committee have made some changes to subscription fees. They are:

- subscriptions will be for one year only (from February to December in 2014 and January to December from 2015 onwards)
- there will no longer be a 5 year subscription rate but those fees already paid in advance will be honoured
- as well as simplified categories there will be a slight increase in the rate
- if you wish to receive a hard copy newsletter this will increase the rate by $10 annually
- members who have a discounted 5 year subscription and receive a hardcopy newsletter may wish to donate $10 per year to help cover newsletter production costs
- the new membership form reflecting the changes is on the back page of this newsletter and is also available from the BSO website http://www.botany.otago.ac.nz/bso/
- if you're not sure when your renewal is due please email maryanne.miller53@gmail.com and I'll confirm your status
- there is a 6 month grace period for subs to be paid then your name will be taken off the database and no newsletter forwarded

Subscription fees are due by 28 February 2014

Editor's Notes

Marcia Dale

Please submit copy for next newsletter by 30th April 2014

Editor's guidelines: Try to aim for a 0.5–1 page of 14pt 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 member:

Angela Brandt

Samolus repens *and* Myosotis pygmaea, *Long Point (Photo: Robyn Bridges)*

Correspondence and News

Electronic newsletter mailing list for other botanical societies.

The BSO is now receiving the newsletters of some other NZ botanical societies electronically and in some cases with permission for us to distribute them to our members. If you would like the latter to be forwarded to you by email, please let Robyn Bridges know and she will add you to the mailing list (robyn.bridges@otago.ac.nz). We'll send only the major ones so it's not a spam-flood.

Respected botanist passes away.

Colin Burrows, noted Canterbury botanist, ex-University of Canterbury professor and Loder Cup recipient, passed away on January 16th after a battle with cancer in recent months. He contributed much to the fields of botany and plant ecology in New Zealand and will be sadly missed.

The Botanical Society of Otago's 2014 calendar is almost sold out!!!

Get in quick as there are only **3 copies left!**

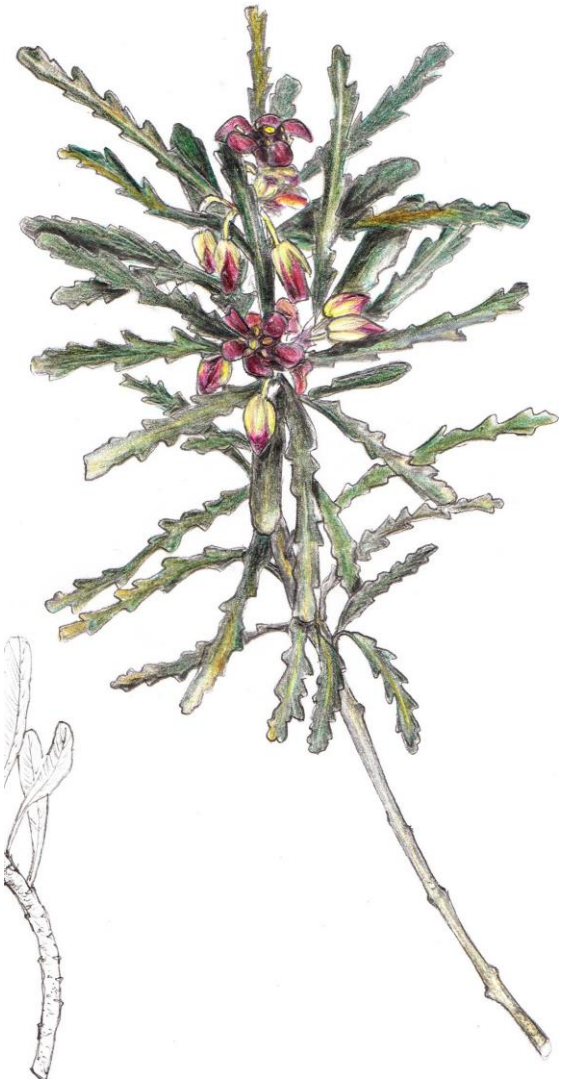
$20 ea. (or multiple copies for **$18 ea.**)
[add $2.50 for mail orders]

Available 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 (bso@otago.ac.nz) with your name, address and whether you want to collect the calendar from Botany Department reception or have it posted, and payment details will be sent.

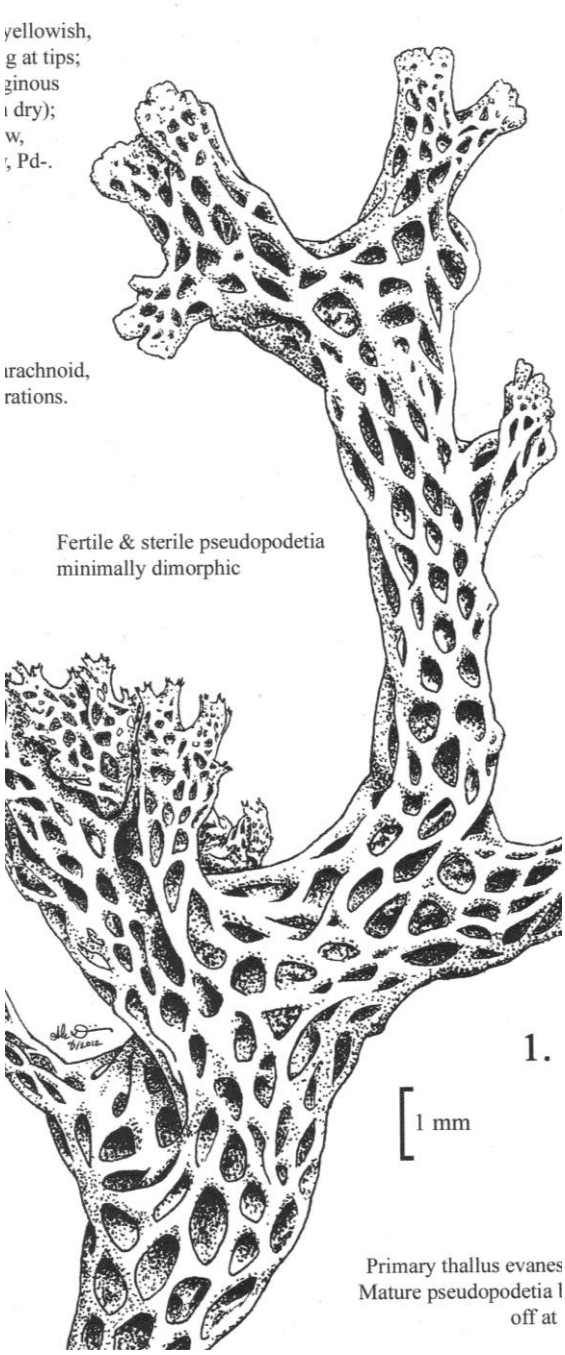
All proceeds to the Botanical Society of Otago http://www.otago.ac.nz/botany/bso/

BSO Audrey Eagle Botanical Drawing Competition 2014

This year the Botanical Society of Otago's Audrey Eagle Botanical Drawing Competition will be held in conjunction with the University of Otago Botany Department's 90th Anniversary and entries will be displayed as part of the celebrations. Botanical artistry is not a widespread skill, so there's a good chance of winning the first prize of $100, second prize of $50 or third prize of $25!



Detail of Pittosporum patulum *by Pippa Lucas, 2012*



Detail of Cladia retipora *by Alexa DiNicola, 2012*

The judging criteria and entry forms will be available from the BSO website, http://www.otago.ac.nz/botany/bso/, at meetings and on the rack opposite the BSO noticeboard in the corridor inside the main Botany Department entrance.

Support the Competition and the Calendar
Entries Due March 31th 2014

Categories are:

1. Plant Portrait
2. Plants in the Landscape

Photographs must be submitted in digital format (JPEG file). Each electronic photo needs to be at a resolution of 6 × 8 inch (30.5 × 20.3 cm), ideally 300 pixels/inch and can be in landscape or portrait orientation. A glossy print of the same size must also be submitted. Pictures in landscape orientation are more suitable for the calendar. Each member may enter up to five photos in total. A prize will be awarded for the first and second placed entries in each category. First prize is $50 and second is $25. Entries will be judged on technical and artistic merit by a panel of three judges. A separate prize of $50 will be awarded for members' choice on the night. Entry forms available: on the BSO website http://www.otago.ac.nz/botany/bso/; opposite BSO noticeboard in a rack in the corridor just inside main door of Botany Department and at the Feb. & March BSO meetings.

Post entries to Botanical Society of Otago, PO Box 6214, North Dunedin 9059 or hand to the Secretary, Department of Botany, Otago University.

Lichens *of New Zealand:*
An Introductory Illustrated Guide *Allison Knight*

A5, 56 pp, full colour, laminated cover.
Published by the Botanical Society of Otago, using the Audrey Eagle Botanical Publishing Fund.

This introductory guide celebrates the extraordinary diversity of New Zealand lichens with full colour images of over 250 common lichen species, plus a glossary illustrating over 60 useful identifying features. Species are divided into 4 colour-coded ecosystems and displayed in order of the three main growth forms. New Zealand is exceptionally rich in lichens and harbours around 10% of the world's lichen species. They are an important, yet often overlooked, component of every ecosystem from the seashore to the mountaintops and contribute over 1800 taxa to New Zealand's biodiversity - nearly as many species as seed plants.

Ordering details – available end of January 2014

$20/copy. 10% discount for members of Botanical Societies and JCBLW participants ($18/copy)
25% discount for orders of 10 or more ($15/copy)

Pick-up at the Department of Botany Office,
479 Great King St., Dunedin North, New Zealand
Only **CORRECT CHANGE** or **Cheques**, please.
Cheques payable to *Botanical Society of Otago*

Or order in advance by **Internet banking:**
Westpac Account No: 03 0905 0029158 00.
Code: *Lichen Guide*
Reference: *Your name*

Postal orders: add Postage and packing:
1–2 copies @ $2; 3–6 copies @ $5; 7–12 copies @ $6
Email: Pay by **Internet Banking** as above.
Post: Send **cheque**, as above, to: Treasurer, BSO
PO Box 6214, Dunedin North 9059

Be sure to enclose or email your delivery address to: bso@botany.otago.ac.nz

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web: http://www.otago.ac.nz/botany/bso/

All proceeds will go to the Botanical Society of Otago to replenish the Audrey Eagle Botanical Publishing Fund.

Articles

Botanising the 'Bad Lands' Part 1

Rowan Hindmarsh-Walls

During the last few months I and some other keen botanist friends have embarked on a couple of weekend tramping/botanising missions to some areas in Southland particularly well known for their unusual geology. Both West Dome in the southern Eyre Mountains and the Livingstone Mountain Range west of Mavora have sparse vegetation cover and in certain lights take on a dark, rusty-purple hue. In both areas the rocks contain large amounts of what are commonly known as ultramafic minerals, these being high in ferro-magnesium compounds and low in calcium, potassium and phosphorus. These are less than ideal growing conditions for most plants, but there are some species that have, over time, carved out a niche in these kinds of areas, mostly in the ultramafic areas of the northern South Island, but also a few down here in the south. The lower endemism on the southern ultramafics when compared to the Kahurangi/Nelson/Marlborough ultramafic blocks is perhaps a reflection of the fact that these areas may have been more recently covered in glacial ice than the northern South Island ones (Rance, pers. comm.). West Dome is unusual in that it stands out by itself at the northern end of the Southland plains and is sheltered only slightly from the north by the Eyre Mountains. In some areas of the mountain the ferro-magnesium concentrations are very high and inhibit the growth of all but the hardiest plant species. These places are dominated by species such as *Oreobolus pectinatus*, *Schoenus pauciflorus* and *Leptospermum scoparium*. Even hardy pines take on a sickly yellow colour. Local endemics such as *Myosotis* 'Mossburn' and

Myosotis *'Mossburn', West Dome (Photo: Rowan Hindmarsh-Walls)*

Top of West Dome Ridge looking north (Photo: Rowan Hindmarsh-Walls)

Celmisia spedenii, as well as an as yet unnamed *Cardamine*, thrive here, especially on top of the mountain where most vegetation gives way to expanses of exposed pebble fields. *Pimelea suteri*, a South Island wide ulramafic endemic, also grows here. The mountain top is an easy few hours walk from either Acton or Windley Burn access points. The day we were there the pipits were probably laughing to themselves as they watched the trio of Jesse Bythell, Kate Caldwell and me crawling up the hill, heads down bums up, exclaiming excitedly every time we found something interesting. The northern end of the mountain top is covered in tors of serpentinite. These, in combination with the half-dead looking vegetation, create a desert like landscape. From here magnificent vistas of the surrounding area from Fiordland to the Catlins can be sighted.

The second expedition took my partner Anna Harris and me to the top of the Livingstone Range above Forks Hut, Windon Burn. After a very bumpy 4WD trip into the hut we stayed the night and then hit the hill the next morning, climbing to 1600m to obtain views down into the upper Upukerora Valley and Countess Range directly to the west. The ultramafic rock in this area is not quite as rich as on parts of West Dome allowing a greater range of species to grow. We did not find any

Hebe epacridea, *1600m Livingstone Mountains (Photo: Rowan Hindmarsh-Walls)*

of the strictly ultramafic endemics. The area did, however, contain many of the drier mountain species that are not found through most of western Southland, such as *Hebe epacridea*, *Helichrysum intermedium*, *Celmisia angustifolia*, *Aciphylla* 'Lomond' and the central northern Southland endemic,

Helichrysum intermedium, *1500m, Livingstone Mountains (Photo: Rowan Hindmarsh-Walls)*

Ourisia spathulata. The area was particularly rich in both *Hebe* and *Celmisia* species, namely: *Hebe buchananii, H. epacridea, H. hectorii* subsp. *hectorii, H. odora, H. pauciramosa, H. petriei, H. rakaiensis, H. salicifolia, H. subalpina, Chionohebe thompsonii* and *Parahebe decora; Celmisia angustifolia, C. bonplanii, C. durietzii, C. glandulosa* var. *glandulosa, C. gracilenta, C. laricifolia, C. ramulosa* var. *ramulosa, C. semicordata* subsp. *stricta, C. sessiliflora* and *C. walkeri.* The Mavora area is truly spectacular country mainly due to its diverse geology which in turn creates diverse landforms and associated communities. The area we tramped through contained many habitat types including stony river flats, subalpine tussock grass and shrubland, scree and boulder fields, alpine cushion bogs, tarns and cliffy outcrops. We noticed that all of these areas had been particularly eaten out by hares with the help of a few chamois and deer. Highly palatable species such as *Anisotome pilifera* and *A. capillifolia* were only found on inaccessible bluffs. I did my bit for conservation, and that night we ate hare back steaks for dinner.

Celmisia spedenii, West Dome (Photo: Rowan Hindmarsh-Walls)

The issue with rare plants

Luke Easton

A recent article in the Otago Daily Times (June 15 2013) regarding the establishment of the new DOC reserve in Gards Road, Waitaki Valley, raised an interesting and important issue conservation botanists face regularly: How do we know which sites are suitable for rare plants? Graeme Loh (Biodiversity Assets ranger for DOC) highlighted this issue in his statement: "We don't know if where they are [referring to the Holloway's broom, *Carmichaelia hollowayi*], here on the edge of the cliff tops, is their preferred habitat or their last refuge". Graeme is an absolute legend and a conservation icon (just like Don Merton and Sir David Attenborough) so he knows his stuff, but an additional question can be asked: Do any of us know how to tackle this conservation problem? Using *Carmichaelia hollowayi* as an example, there are only three known sites of this critically endangered species and all are in the Waitaki River Valley of Otago (de Lange *et al.* 2010). They currently inhabit limestone bluffs and outcrops, but number less than 250 adult plants (although exact numbers are difficult to determine given that they are rhizomatous) (de Lange *et al.* 2010).

If these populations are indeed remnant populations and perhaps inhabiting "sub-optimal" environmental conditions, how can we tell? The most efficient way of determining population viability within certain conditions is to monitor them, especially after the main threats of browsing and weed invasion have been removed (and somehow hopefully disease too). Should the population continue to decline then perhaps this is an indication that conditions are not favourable, but when you are dealing with a critically endangered species any further decline is not desirable. Using genetics to determine effective population sizes may also be considered, especially when a population exhibits relatively high genetic diversity which may suggest that the population was previously greatly distributed. On a smaller and less intensive scale, however, spatio-

temporal modelling using boosted-regression trees may be an option as these models rely on presence-absence data and any corresponding variables that may affect the distribution of that particular species. These models are limited by the fact that not all variables that actually influence population persistence will be measured (some are obvious like pH level, rainfall, soil depth, etc.) and investigating variables like whether disturbance is necessary or how intensive it needs to be is more difficult to determine (an issue associated with the pygmy button daisy, *Leptinella nana* (Given 2001)).

These same limitations are reflected through the use of dimensional scaling and principal component analyses as tools in experimental translocations. These analyses link particular groups (say a species with low, medium and high growth rates) with particular variables thus determining important conditions necessary for population establishment and/or persistence. The biggest issue is that there are often no sites where rare plants persist well, thus determining new variables or mixed levels of known variables as potential "optimal" conditions are required in these experiments which are obviously a stab in the dark. What we need to remember is that yes, there is a risk involved with translocations where recruitment or establishment may be limited or unsuccessful in our experimental conditions, but also if nothing is done then we risk losing species forever. For instance, Godefroid and colleagues (2011) reviewed the outcome of 249 plant reintroductions worldwide and found that survival, flowering and fruiting of translocated plants are generally low (~52%, 19%, and 16% respectively). Despite this, they also identified factors that positively influence translocation outcomes such as: reintroducing into protected sites, using seedlings, using larger founder populations, site preparation and incorporating genetic knowledge into management efforts. Furthermore, they emphasised the importance of post-monitoring as a crucial component of increasing our knowledge on how best to manage rare species if translocation methods are used.

Additionally, understanding seed ecology can also provide us with key insights into what conditions may be required to be considered "optimal". Furthermore, given that *Carmichaelia* spp. have a low recruitment rate (de Lange *et al.* 2010), optimising recruitment in artificial conditions based on newfound knowledge of seed ecology will help in establishing suitable founder populations required for translocations to be successful (Godefroid *et al.* 2011). Indeed, according to Grüner and Heenan (2001), *Carmichaelia hollowayi* seeds can remain viable for at least four years and have a high germination rate under both dark and light conditions (up to 97% if seeds are scarified). In order to tackle this conservation dilemma of understanding optimal sites for rare plants we clearly do have some tools up our sleeves, particularly regarding factors associated with translocations. What is now needed is more research in to how we can optimise each of the components identified that are likely to produce a successful outcome. Hopefully some more people like Graeme Loh can collaborate and meet this issue head on in our battle to save our rare flora from extinction.

References

de Lange *et al.* 2010. *Threatened plants of New Zealand*. Christchurch, New Zealand, Canterbury University Press.

Given D 2001. Protection and recovery of the pygmy button daisy 2001-2011. *Threatened Species Recovery Plan 34*. Wellington, New Zealand, Department of Conservation.

Grüner I, Heenan PB 2001. Viability and germination of seeds of *Carmichaelia* (Fabaceae) after prolonged storage. *New Zealand Journal of Botany 39:* 125-131.

Godefroid *et al.* 2011. How successful are plant species reintroductions? *Biological Conservation 144:* 672-682.

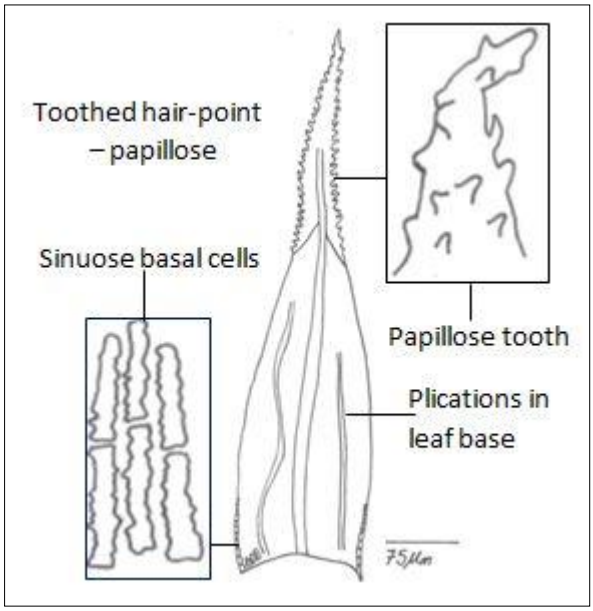
The Little Things

Aimee Pritchard, Kelly Frogley and Anna Harris

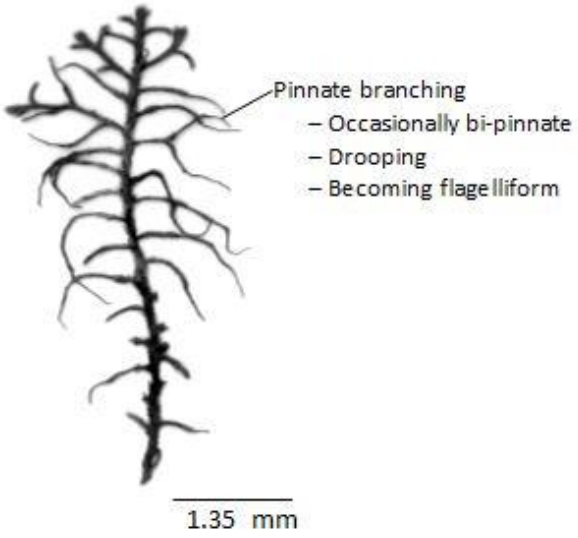
These specimens were collected from mixed-tussock shrubland in the Long Sound Catchment, Southland at an altitude of 958 m. Drawings and photos by Aimee Pritchard, Kelly Frogley and Anna Harris

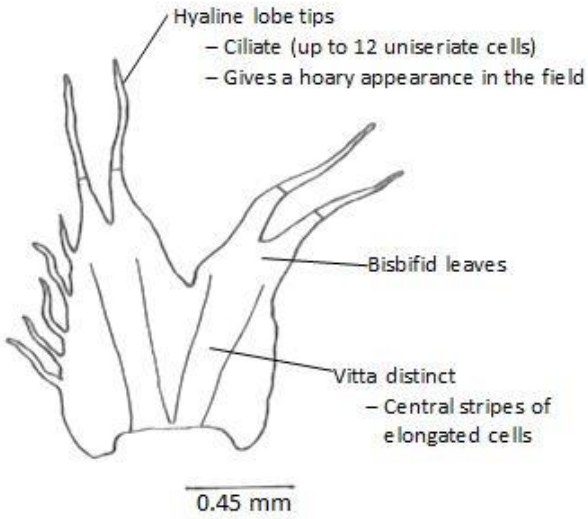
MOSS: *Racomitrium pruinosum*
A typical mountainous moss confined to the Southern Hemisphere. The extremely hoary leaves make it easily distinguishable in the field.

Racomitrium pruinosum



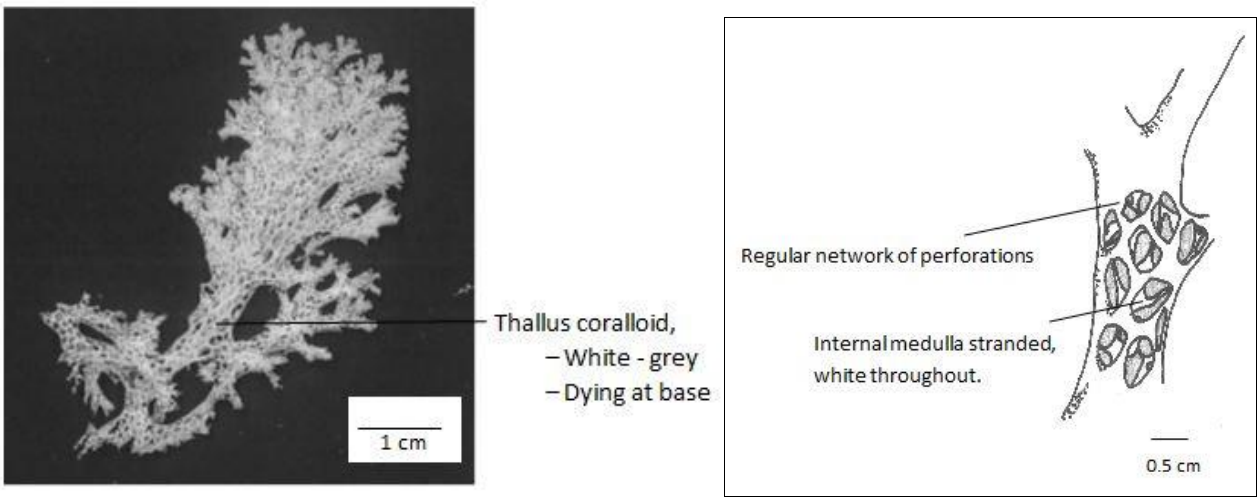
LIVERWORT: *Lepicolea scolopendra*
A common epiphyte found throughout New Zealand





Lepicolea scolopendra

LICHEN: *Cladia retipora*
A fruticose lichen often found in sub alpine peat bogs, which is notable for its delicate, coral like appearance and for the extensive cushions which it can form.



Cladia retipora

Spring flowers: but where were the natives?

Tegan Lamont and John Steel

Spring is about to leave with the magnificent display of rhododendrons leading the charge into summer. What would it be like without them? The visit to Peter and Pru Johnsons' garden highlighted the season, but what about the natives? Apart from the great splashes of yellow from the sophoras, there's not too much to rave about without some diligent searching – maybe it's true that, at least in the south, New Zealand is a two-season (some might say one!) place. However, the following day, a search among the understorey of some local bush revealed this specimen of *Nematoceras iridescens*. They reliably flower every year in the same place, but in spite of their rather dramatic appearance they can be quite difficult to spot. No one has been able to explain to me just what those huge whiskers are for and as for pollination by tiny gnats, there doesn't seem to be any concrete proof of this anywhere either. The solitary leaves lie horizontally in front of the flower as a perfect landing-pad for a pollinator, but several bouts of patient watching have consistently failed to reveal any visitors – maybe it's a night-time vigil that's needed.

[Tegan was a first-year Biology student in the Department of Botany in 2013]

Nematoceras iridescens *Tegan Lamont*

Meeting and trip reports

Botany Department Colloquium 2013

David Lyttle

The project topics covered by the student speakers in the 2013 Colloquium were varied and diverse as reflects a Department with a wide range of research interests. The winners of the BSO student prize for the best talks were:

Jaz Morris **Whole genome re-sequencing of two 'wild-type' strains of the model cyanobacterium *Synechosystis* sp PCC 6803**

Tim Crawford **The role of a low-oxygen induced gene cluster in *Synechocystis* sp PC 6803**

Yuanyuan Feng **Environmental controls on the coccolithophore *Emiliania huxleyi***

Jaz re-sequenced two strains of the laboratory organism *Synechosystis* sp. PCC 6803, a cyanobacterium that is being used as a model organism for studies of photosynthesis by the Eaton-Rye Lab in Biochemistry and the Summerfield Lab in Botany. With the detailed genetic studies on photosynthesis being undertaken by both labs it is important that the entire genetic sequence of the laboratory strains *Synechosystis* be known with precision. Jaz did an excellent job of explaining the modern sequencing technology to the audience and did not get bogged down in unnecessary technical detail.

Tim explored the role of a gene cluster containing alternative forms of the genes for core proteins in Photosystem II the principal light harvesting apparatus in all photosynthetic organisms. The genes seemed to be orphan genes and did not have a clearly defined role in photosynthesis. Tim's work, however, has suggested a role for these genes and has shown how they may have been important in cyanobacterial evolutionary history.

Yuanyuan investigated the growth of the marine organism *Emiliania huxleyi* under different experimental conditions in a laboratory setting. It is important to know how these organisms are likely to respond to increasing CO_2 concentration, rising temperatures and ocean acidification associated with global warming. Yuanyuan presented her data in a clear and uncomplicated way and interpreted her findings to the audience.

All three winners presented their talks again to the BSO at the monthly meeting on the 16th October.

On behalf of the BSO I would like to congratulate the prizewinners, Jaz, Tim and Yuanyuan for their presentations and thank the organizers of the Student Colloquium for their invitation to attend the event and sit on the judging panel. The event was really well run and is very worthwhile. Presenting one's work to a general audience is not easy and requires a great deal of preparation and practice.

Garden of Peter and Pru Johnson, Broad Bay, 5th October 2013

David Lyttle

Before leaving for Broad Bay I checked the phone book for the correct street number in case I got lost. I need not have bothered as it was fairly evident when I arrived which was the correct address. The masses of *Clematis paniculata* cascading from mature established trees identified the property immediately.

Dunedin has many fine gardens but this garden is in a class of its own. New Zealand gardeners tend to follow English models but this garden is different and quite extraordinary. Mature trees that have been carefully shaped give a sense of height and space. The overall impression is of a mosaic of forest and shrubland with paths leading off in different directions inviting the visitor to

explore all the corners and aspects of the garden. Garden beds are restrained by dry stone walls constructed from locally sourced basalt showing a progression from apprentice to master builder. In places hardwood sleepers are used. The hard landscaping is balanced and subtle; paths are graveled and beds are mulched to facilitate maintenance. One of the remarkable things about this garden is that it is virtually weed -free no doubt due to a lot of hard work and some ecological insight.

Exotic and New Zealand native plants are used in equal measure. There are clipped box hedges and Irish yews, rhododendrons, magnolias, viburnums and paeonies, elements of a more traditional gardening style, but the effect is ameliorated by the use of New Zealand divaricating shrubs, red tussock, whipcord hebes, astelias and ferns. There is a clipped hedge of *Pseudowintera colorata* flowing sinuously along a slope reflecting perhaps the natural wind-shorn vegetation of the Otago Peninsula. Set amongst the trees

Trillium chloropetalum *and primulas by the compost bin (Photo: David Lyttle)*

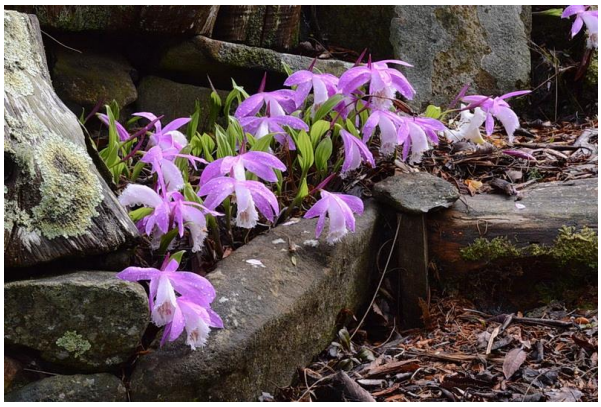
and shrubs are a diverse collection of choice herbaceous perennials growing in large drifts; *Bergenia*, *Helleborus*, *Trillium chloropetalum*, *Trillium rivale*, *Primula* both auricula and polyanthus primroses, *Erythronium*, *Sanguinaria*, *Cyclamen* and in one particular pocket, a stunning display of *Pleione* orchids. Just to prove the point that New Zealand is not bereft of good horticultural plants there was a magnificent flowering specimen of a *Clematis*

Copper tussock and divaricating shrubs bordering a gravel path (Photo: David Lyttle)

marmoraria hybrid growing out of a dry stone wall. It was noteworthy that each time I took a photograph I did not have to compose it; the work had already been done.

The genius of this garden is that for every problem that has arisen (every gardener knows landscaping throws up issues as does fitting plants into an overall planting scheme) a solution has been arrived at often somewhat whimsical and mostly showing considerable originality. Who else would have thought of planting *Collospermum* on posts or constructing an aerial walkway in an old macrocarpa hedge?

Our thanks to Peter and Pru for inviting us to their garden and for the delightful and enjoyable time we spent there.



Pleione orchids (Photo: David Lyttle)

Visit to Styles Creek Bush, 5th October 2013

Moira Parker

Styles Creek Bush is situated in a gully at the top of Matariki St, Broad Bay – just a stone's throw from Peter and Pru Johnson's magnificent garden. Following the garden tour, Peter accompanied Botanical Society members up the road to something quite different, a bush remnant that was protected by a QE II covenant in 1987. Unfortunately Helen Clarke was unable to come and share her knowledge of the bush.

The bush is on the property of Frank and Annie Pepers and the access track passes alongside orchards and small woodlots. But once over the stile into the fenced bush covenant, it is a different world. Huge fuchsias (*Fuchsia excorticata*) lean over the bouldery creek and pate (*Schefflera digitata*) is abundant in the shady subcanopy. A variety of ferns are present, with 13 fern species on the list provided by John Steel. The track follows the edge of the creek in a series of steps and then veers onto a central ridge - once an open grassy area planted with young trees, each surrounded by a tyre to keep the rabbits at bay (see photo taken Oct 1987).

Twenty six years on, we walked beneath a canopy of lemonwood (*Pittosporum eugeniodes*), ngaio (*Myoporum laetum*), mahoe (*Melicytus ramiflorus*) and kowhai (*Sophora microphylla*) (see photo taken in 2013). It was pleasing to see the variety of seedlings that are establishing beneath the canopy of the early plantings.

Peter described the weed control that he and Helen are undertaking on a regular basis. Old man's beard (*Clematis vitalba*) is a problem, growing among blackberry on a steep slope. Banana passion fruit (*Passiflora tripartita*) got away over the years, resulting in extensive vines growing up into the canopy or scrambling over open ground. And there has been Chilean rhubarb (*Gunnera tinctoria*) to eradicate.

In the area of a recent slip, we were intrigued by numerous aerial roots on the trunk of a broadleaf tree (*Griselinia littoralis*) and ideas were put forward to try to explain this.

There is small scale planting still taking place. Fragrant tree daisy (*Olearia fragrantissima*) propagated from seed collected in the Sandymount Reserve; bare rooted broadleaf have been successfully transplanted and *Coprosma* cuttings are doing well.

For those Botanical Society members familiar with this site in the early days before the fence was put up to keep out the stock, it is extraordinary to see the transformation from a scrappy bush remnant surrounded by pasture to the coastal forest of today.

Styles Creek central ridge 1987 (Photo Moira Parker)

Styles Creek central ridge 2013 (Photo Helen Clarke)

Styles Creek Bush Lichens, 5th October 2013

Allison Knight and Lars Ludwig

After the richly decorative communities of lichens thriving in the high light of the Johnsons' beautiful garden the lichen flora in the deep damp shade of Styles Bush seemed rather sparse. Closer inspection revealed several intriguing species. A large, green foliose lichen on a rock beside the track has been sent away for expert identification, as has a cyanobacterial species with a powdery sorediate margin. This was growing beside the jelly lichen *Leptogium* cf *philorheuma* on a damp rock at the bush edge. But the most intriguing thing that Lars spotted was a large, hairy-legged spider cleverly camouflaged with lichen-like markings.

'Lichenized' spider emerging from a webbed hole lined with Hyperphyscia adglutinata*. Although this lichen is green when damp it dries to a pale grey colour that would blend in well with the spider's markings, as do the pale lobes of the surrounding* Physcia *species (Photo: Allison Knight)*

Field Trip to Long Point, 2nd November 2013

Robyn Bridges

Irahuka/Long Point, Catlins, is probably the jewel in crown in the Yellow Eyed Penguin Trust's efforts to secure safe and protected breeding grounds for this endangered penguin. This stunning portion of southern coastline, purchased in 2009 with the Minister of Conservation's Nature Heritage Fund, together with existing Department of Conservation reserves, protects 12km of coastline as safe breeding grounds for this rare and endangered bird. The Long Point area 'represents more than 10% of the mainland NZ population of yellow-eyed penguins' (Yellow-Eyed Penguin Trust website). As well, the area has a variety of coastal plant communities. The whole of Long Point has been cleared of its original forest cover and needless to say it's very exposed. A lone rata planted by MP Steve Chadwick at the time of the purchase, is managing to survive with considerable protection; re-vegetating this site will be quite a challenge.

On the Saturday we spent time looking at the coastal turf plants; an activity that suited the weather of the day. Keeping one's head down was definitely advantageous! Later in the day, we explored the northern side of the point where a sheltered bay affords a welcoming bush covered habitat for the penguins. The cliffs are spectacular, high and mostly white from the extensive covering of the lichen *Pertusaria graphica.* Apparently Captain Cook noted in his journal that the cliffs reminded him of the white cliffs of Dover!

Not all of us were able to stay for the whole weekend and the following is the report by Graeme Jane on Sunday's activities:

On Sunday we headed for Chaslands. After a detour down the Fleming River boardwalk we found a track that led to the edge of the dunes and the river mouth crossing to Chaslands Peninsula. After a shallow crossing we started to survey the cliff edge traversing the shore for about 1 km. The main vegetation was a *Hebe elliptica* scrubland with *Coprosma proquinqua, Coprosma lucida, Griselinia littoralis* and *Dracophyllum longifolium*. *Anisotome lyallii* was in great flower perched on the cliff along with *Disphyma australe, Poa cita, Hierochloe redolens, Asplenium lyallii* and *Blechnum blechnoides*. Near the landing a lot of introduced grasses and adventives were present.

Atriplex buchananii *(Photo: Robyn Bridges)*

Anisotome lyallii *(Photo: Robyn Bridges)*

After about a kilometre we took to the cliff top and proceeded to the peninsula tip. At first the shrub fringe continued with highlights including *Ileostylus micranthus* on its usual shoreline host *Coprosma propinqua, Clematis paniculata* (in flower) and shrubs of wind blasted totara. This soon disappeared and here the cliff was tall and largely bare, with just a fringe of *Anisotome lyallii* decorating the cliff top and the odd hebe. Near the peninsula tip (in pasture) scattered patches of turf plants were dominated by *Leptinella dioica* with few other plants, in contrast to the varied plants at Long Point the day before, where many were in flower. Of particular beauty though was *Myosotis rakiura* just coming into flower. We then returned around the forest patch to the village to find the tide quite high with a damp crossing. We returned directly up the estuary to the boardwalk mostly on firm sand in 40 mins.

After lunch we headed to Papatowai and the Maclennan Scenic Reserve where we explored the kahikatea shrubland down to the river along a whitebaiter's track. Here there was a sparse canopy of ragged kahikatea and ribbonwood and a dense shrub subcanopy of *Coprosma propinqua, Myrsine divaricata* and a few other shrubs and a ground cover of sphagnum or mud with patches of *Callitriche muelleri, Carex secta* and *Astelia fragrans*.

Thanks to David McFarlane, the Field Manager for the Yellow Eyed Penguin Trust for his assistance with this trip!

Crassula moschata *(Photo: Robyn Bridges)*

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Committee 2013–2014

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'Remuremu' painting of Selliera radicans *by Marcia Dale for the Wellington Botanical Society Jubilee Award granted in 2011*

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