TRILEPIDEA

Newsletter of the New Zealand Plant Conservation Network

No. 126.

May 2014

Deadline for next issue:
Monday 16 June 2014

SUBMIT AN ARTICLE TO THE NEWSLETTER

Contributions are welcome to the newsletter at any time. The closing date for articles for each issue is approximately the 15th of each month.

Articles may be edited and used in the newsletter and/or on the website news page.

The Network will publish almost any article about plants and plant conservation with a particular focus on the plant life of New Zealand and Oceania.

Please send news items or event information to events@nzpcn.org.nz

Postal address:
P.O. Box 16102,
Wellington 6242,
NEW ZEALAND

PLANT OF THE MONTH, p. 2

Crassula mataikona. Photo: Jeremy Rolfe.

New Zealand Indigenous Flora Seed Bank (NZIFSB) update

Jessica Schnell, Seed Bank coordinator (J.L.Schnell@massey.ac.nz)

It has been a busy few months for the seed bank project with the seed collecting season well underway and three seed collector training workshops held around the country.

The first seed collector training workshop was held at the Auckland Botanic Gardens from 26 to 27 February. The workshop was led by Jason Halford from the Seeds for Life project operating in Queensland, Australia. Seeds for Life (SfL) is a joint venture between the Millennium Seed Bank (MSB), a project of the Royal Botanic Gardens, Kew, in the United Kingdom, and a number of Queensland research, non-government organisations and government bodies, collectively called the Q-Seed Partnership. Twelve participants took part in the training. Participants came from a range of backgrounds including five from Auckland Council, three from Massey University, an arborist, and a Department of Conservation ranger. Seed from five species was collected in the Hunua Ranges and, in the process, much was learnt about determining what a population is, cut tests for assessing seed quality and the practical and theoretical aspects of seed collecting.

Figure 1. We were very grateful to have a skilled arborist on hand to collect seeds from tall rimu trees! Photo: Marion Mackay.

The second seed collector training workshop was held in Palmerston North at Massey University from 17 to 18 March. This workshop was led by Michael Way from the Millennium Seed Bank Partnership, Royal Botanic Gardens, Kew. There were 16 participants, again from a range of backgrounds, taking part including three from Otari–Wilton's Bush, four from Ngati Rangi, three students from Massey University and three people from local environmental organisations.

Figure 2: Removing fruits from rimu branches. Photo: Marion Mackay.

PLANT OF THE MONTH – *CRASSULA MATAIKONA*

Crassula mataikona. Left: habit of plant. Right: flowers. Scale bar = 1 mm. Photos: Jeremy Rolfe.

Plant of the Month for May is *Crassula mataikona*, a naturally uncommon succulent perennial found growing in open coastal habitat.

It has been recorded from the South Taranaki Coastline, coastal eastern Wairarapa, Aorangi Range, Cape Palliser and the Wellington coastlines, the Marlborough Sounds and parts of the eastern South Island coastline as far south as Dunedin. *C. maitakona* forms low, spreading clumps, rooting freely where stems touch the ground. The small leaves are pale green to pink, and tiny four petalled green to red-pink flowers can appear throughout the year.

Crassula mataikona may be more common than we think. Its small size means it can be easily over-looked and it can be confused with other native and exotic *Crassula* spp. To help spot the differences, see the Network factsheet for *C. mataikona* at: www.nzpcn.org.nz/flora_details.aspx?ID=742

Figure 3: Time for a group de-brief! Photo: Marion Mackay.

Figure 4: Taking a herbarium specimen in the field to assist with plant identification. Photo: Jessica Schnell.

For the practical aspects of the training, four forest species, including kowhai, were used. The importance of seed banking as part of an *ex situ* conservation strategy in tandem with *in-situ* conservation, of identifying risks in the field and how to reduce these risks were all topics covered in the workshop.

Figure 5: Palmerston North Seed Collector training participants under the mighty totara tree in the Manawatu Gorge. Photo: Marama Gray.

Our third seed collector training workshop was hosted by the Christchurch Botanic Gardens, Hagley Park, Christchurch from 7 to 9 April. Pat Wood (from the Millennium Seed Bank Partnership, Royal Botanic Gardens, Kew) led the training with nine participants, including four people from the Department of Conservation, a Masters student, a teacher, and other interested people from the community taking part. The practical aspects of the training were undertaken in the Port Hills with two species collected. This workshop included presentations on how to identify likely recalcitrance (intolerance to drying) in seed, how to assess the feasibility of collecting from a population and the importance of gaining appropriate permissions before beginning any collection from the environment.

It has been a fantastic few months! The input from Jason, Michael and Pat into the training is very much appreciated and the enthusiastic response of the course participants very pleasing. There is now a group of around 30 trained collectors who will be able to contribute to the collection of seed for the project.

Figure 6: Participants in Christchurch Seed Collector training workshop. Photo: John Clemens.

Figure 7: Cut test on seeds to see the quality of our seed collection. Photo: Jessica Schnell.

Promotion of lupins and foxgloves

In the January issue of *Trilepidea* (no. 122, p 6-7), it was reported that McGregor's was selling Russell lupins and foxgloves as native plants. A number of members wrote to McGregor's about this. Near the end of April, John Sawyer received the following reply from McGregor's with an invitation to publish it in the newsletter as a response to the whole membership.

> *Having received, as you suggested, a number of emails from NZ Plant Conservation Network members regarding their concerns in respect of the sale of McGregor's Russell Lupins and Foxglove seeds we have taken some time to consider your networks members emails and our response to them.*
>
> *Our position on this issue is as follows.*
>
> - *McGregor's supplies Russell Lupins and Foxglove seeds in our standard home garden flower range, as do Yates and King's Seeds.*
> - *Russell Lupins and Foxglove are both also readily available as seedlings from garden outlets.*
> - *We also offer a New Zealand Seeds range that is sold primarily through Tourist Outlets and most of these seeds are bought by overseas visitors who take them home with them. This range consists of 19 Native varieties, which are marked with a New Zealand Native banner on the packet.*
> - *In response to requests for Russell Lupins and Foxgloves that tourists see growing wild we offer them as New Zealand Wildflowers with a New Zealand Wildflower banner on the packet. (Please refer to the attached images).*
> - *Whilst we are aware that Lupins pose a serious environmental issue to the Canterbury's braided rivers system this is a regional problem and as such should be addressed on a regional basis, not by a blanket ban covering the whole country.*
> - *One of your Network Members correspondence on this issue referred to the wording on our Wildflower packets describing Russell Lupins as "Classical Roadside Colour" as being misleading and not acceptable. We believe this to be a valid point and we will remove that wording.*
>
> *We have not replied to the individual Network Members campaign emails received and would suggest a more organised approach for our response would be for it to published in a Network Newsletter format to your members.*
>
> *Many thanks,*
> *Peter Reece.*
> *Team McGregor's*

Member, Graeme Ure, reported the following on the Network Forum on 30 April:

> On 27 Dec. 2013 Peter de Lange, brought this to our attention www.nzpcn.org.nz/members_forum_threads.aspx?ID=383 and several members contacted McGregors who chose to ignore our requests. Amy Adams, Minister for the Environment, declined to get involved; Nick Smith M. of Conservation asked the DOC to look into it. Knowing that DOC has no legal authority in this and after 2 months of no response from McGregor's I made a complaint to the Commerce Commission, I recently received notification from the Commerce commission that they have sent McGregor's notice that their current marketing of these seeds is non-compliant (Non-compliance Order?), so hopefully McGregor's will now adjust their marketing.

The South African invasive legume *Dipogon lignosus* has brought *Burkholderia* rhizobial symbionts into New Zealand

Wendy Ying Ying Liu, Lincoln University (wendy.liu@lincolnuni.ac.nz); Hayley Ridgway, Lincoln University (hayley.ridgway@lincoln.ac.nz); Trevor James, AgResearch Limited (trevor.james@agresearch.co.nz); Stuart Larsen, Lincoln University (stuart.larsen@lincoln.ac.nz); Mitchell Andrews, Lincoln University (mitchell.andrews@lincoln.ac.nz)

Dipogon lignosus, common name 'mile a minute', is a perennial climbing vine of the legume family, native to the Fynbos biome of the Cape of South Africa, which has become invasive in the Australian-Pacific region. *Dipogon* is capable of very fast growth and can quickly smother indigenous native ground cover plants and also shrubs and trees, weighing them down and causing their branches to break. In New Zealand, *Dipogon* is designated as an unwanted organism and is banned from sale, propagation and distribution and is immediately eradicated when found (Popay et al. 2010). *Dipogon* is known to produce root nodules in its native South Africa but the bacteria involved have not been characterised.

Dipogon lignosus. Photo: Jeremy Rolfe.

We assessed if *Dipogon* nodulates in New Zealand soils (Liu et al. 2014). On finding that it did, we isolated and characterised 10 strains that produced functional nodules on *D. lignosus* sampled in unmaintained gardens at Dinsdale, Hamilton; Jesmond Park, Hamilton and coastal cliff/ sand dunes at Mokau, Taranaki in 2011-2012. Two of the strains were similar to strains associated with crops and probably originated from crop inoculum that is widely used in New Zealand. However, eight of the strains were *Burkholderia*, a bacterial genus that occurs over a wide range of niches, including fungi, plants, animals and humans, and has been confirmed to produce functional nodules on a range of legumes over the past 10 years. To date, Brazil and South Africa have emerged as principal centres of diversity of *Burkholderia* species that form functional nodules on legumes; the South American and South African strains separate clearly on the basis of their symbiosis genes. The eight *Burkholderia* strains from *Dipogon* showed a very close relationship (some genes identical) to *Burkholderia* rhizobia strains isolated from South African legumes. One 'New Zealand strain' was tested and was shown to nodulate four other legumes from South Africa. These findings provide very strong evidence that the *Burkholderia* strains isolated from *Dipogon* in New Zealand originated in South Africa and were somehow transported with the plant from their native habitat. A wide range of rhizobia have been isolated previously from legumes in New Zealand (www.landcareresearch.co.nz/resources/collections/icmp) but this is the first report of a *Burkholderia* in New Zealand soils capable of nodulating a legume.

Acknowledgement

This work was supported by a Lincoln University Doctoral Scholarship (WYYL).

References

Liu W.Y.Y.; Ridgway H.J.; James T.K.; James E.K.; Chen W-M.; Sprent J.I.; Young J.P.W.; Andrews M. 2014: *Burkholderia* sp. induces functional nodules on the South African invasive legume *Dipogon lignosus* (Phaseoleae) in New Zealand soils. *Microbial Ecology*: in press.

Popay, I.: Champion, P.; James, T. 2010: *Common weeds of New Zealand*, 3rd ed. New Zealand Plant Protection Society Inc., Christchurch.

Native vegetation through the eye of an artist

Casey Moore, UK (http://www.caseymoore.com)

I set off in February 2013 to Fiordland in the South Island of New Zealand to spend eight days on a refurbished ferry called the Pembroke photographing specimens in two of the most untouched places on Earth: Dusky and Breaksea Sounds. Access to the area is by a 40 minute helicopter rider from Te Anau over the Southern Alps.

Using my camera like a magnifying glass, I went looking for botanical specimens. What I found was a series of living things reflecting a kind of universal symmetry. These macro images of botanical specimens remind me of the images that the Hubble telescope sends back. Quantum physics tells us that at the level of energy, everything is connected. What surprised me was just how easy it is to see the universe repeating itself in these plant specimens.

The camera I used is a 1970's Sinar P with 5×7 back (that's the film size in inches). Flying out from London with 50+ kg of technical studio camera equipment and paraphernalia was quite a task but once I was pointing my lens at the wonderful flora and fauna of Fiordland it was definitely all worthwhile. I carried a piece of black fabric with me and a hand-held flash light to achieve the look I wanted, isolating the plant structures against the background.

Once I got the films back to my darkroom in London, there was about a week of processing before I could get a feel for what I had captured. I'm not a botanist so the next task was to categorise them. I made contact with Jesse Bythell at www.biosis.co.nz and with her amazing help was able to identify almost all of them.

It was a wonderful experience that has finally reached fruition now with my large handmade prints going on show at FHE Gallery in Auckland for 5 weeks from Tuesday 27 May. Also on show at FHE is a series of large colour flower works that I've made more recently so there are plenty of plants on show!

Links

Exhibition - http://www.fhegalleries.com/exhibitions/showArticle.php

Website - http://www.caseymoore.com

Fiordland images - http://www.caseymoore.com/botanica-condenda-sublime-symmetry/

Fiordland expedition video - http://www.caseymoore.com/videos/

Flower images - http://www.caseymoore.com/flowers/

The Auckland Kererū Project

Alice Baranyovits (abar939@aucklanduni.ac.nz)

The Auckland Kererū Project has been set up as part of a PhD project that is investigating how kererū (New Zealand pigeon) move across fragmented urban landscapes and the potential of kererū to transport seeds, of both native and introduced plants, large distances. Kererū are often described as the most important seed dispersers in New Zealand because they eat the fruits of a large number of plant species and pass the seeds intact. However, it's not just native plants that they disperse but also introduced plants, such as loquat and monkey apple, possibly transporting these non-native plants into forest patches. In order to understand how kererū may be moving seeds of both native and introduced plants around the city we need to know what fruits are available to them where and when.

Furthermore, although the city is not typical kererū habitat, we know some do find a home here, making use of the resources available to them in the city's many reserves and private gardens. In order to develop a better understanding of how kererū utilise their urban home, we need to know what resources are particularly important to them and whether their numbers fluctuate over the seasons. In order to answer these questions, I need your help!

This is where the Auckland Kererū Project comes in, providing a platform where information on garden plants and/or urban kererū can be recorded. There are lots of different ways to contribute and you don't need to see kererū regularly or even at all to get involved in some aspects of the project. You can make a one-off contribution in two different ways: either by recording your garden plants and/or by recording urban kererū sightings (you can enter as many kererū sightings as you like). If you would prefer to have a more continual involvement, you can register to take part in the phenology study (recording when your plants fruit) or the quarterly kererū count or both.

More information about how to become involved and what's required for the phenology study and kererū count can be found on the website (www.aucklandkereruproject.weebly.com). Also, you can keep an eye on the updates page if you are interested in hearing about how other aspects of the project are developing.

Research request for seed

Clianthus and *Carmichaelia* are members of the Fabaceae (legume) family, a family known for producing seed that can be stored for long periods at low moisture and temperature without any problem. The seed of many Fabaceae, including *Clianthus* and *Carmichaelia*, have a hard, water impermeable seed coat that may have a role in extending seed storage life. There are two species of *Clianthus* and 24 *Carmichaelia* indigenous to New Zealand. Both species of *Clianthus* and 10 *Carmichaelia* species are listed as threatened. Research at Massey University by Park Myoung Joo as part of her PhD found that seeds of *Clianthus* lost water impermeability when desiccated to low moisture content (5.3% moisture), possibly because of disruption of the cells in the lens and extrahilar regions of the seed (Park, 2013). Work by Conner & Conner (1988) found that the viability of seed of *Carmichaelia stevensonii*, which also has hard seed coat, was reduced after 6.5 years of storage. This is a shorter storage period than would normally be expected for seed with a hard seed coat. Moreover, seeds of *Carmichaelia arborea* and *C. odorata* reportedly have a thin and membranous seed coat, while *C. glabrescens, C. muritai, C. stevensonii* and *C. torulosa* produce seeds with a hard seed coat as is more typical for *Carmichaelia* (Gruner & Heenan, 2001). Park Myoung Joo also found that seeds of *Carmichaelia williamsii* retained their hard seed coat at low moisture content (3.7% moisture).

Clianthus puniceus. Photo: Jeremy Rolfe.

Follow-up research is planned on *Clianthus* and *Carmichaelia* spp. by Yu Kai, a masterate student at Massey University, who is supervised by Craig McGill, Marion MacKay (both Massey University) and Jayanthi Nadarajan from the Millennium Seed Bank Partnership, Royal Botanic Gardens, Kew (Wakehurst Place). This research will investigate the loss of 'hardseedness' and possible sites of water entry in *Clianthus* and *Carmichaelia*. Whether the loss of water impermeability in *Clianthus* spp. is a result of cracking of the lens and extrahilar regions and if other *Carmichaelia* spp. will retain hardseedness at low seed moisture and in particular the relatively short-lived *C. stevensonii* will be investigated.

To pursue this research we are looking for seeds of the following species: *Carmichaelia arborea*; *C. odorata*; *C. stevensonii*; *C. muritai* and *C. williamsii,* and *Clianthus puniceus* and *C. maximus.*

If anyone is able to supply seed we would be pleased to hear from them. Please contact:

Craig McGill
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PN433
Private Bag 11222
Massey University
Palmerston North 4442
E-mail: c.r.mcgill@massey.ac.nz
Phone: +64 6 356 9099 extension 84803

References

Conner, L.; Conner, A. 1988: Seed biology of *Chordospartium stevensonii*. *New Zealand Journal of Botany* 26: 473–475.

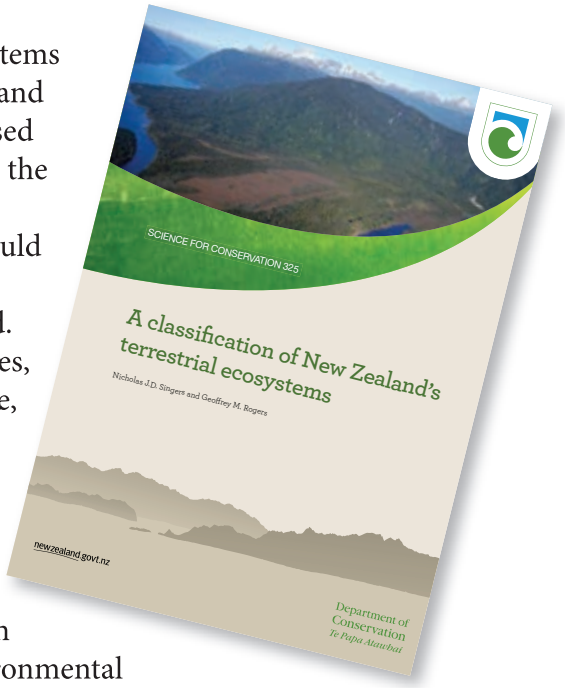
Gruner, I.; Heenan, P.B. 2001: Viability and germination of seeds of *Carmichaelia* (Fabaceae) after prolonged storage. *New Zealand Journal of Botany* 39: 125-131.

Park, M.J. 2013: Seed storage behaviour of New Zealand's threatened vascular plants. PhD thesis. Massey University. 180pp.

New Book: A classification of New Zealand's terrestrial ecosystems

By Nicholas J. D. Singers and Geoffrey M. Rogers, *Science for Conservation 325*. 87 p.

What's it about?



The need to classify New Zealand's diverse and complex ecosystems is driven not only by scientific curiosity, but also by increased land use planning activity. The classification of ecosystems, as opposed to vegetation, involves the description of relationships between the abiotic environment and its biotic overlay. Although the use of modern quantitative approaches to ecosystem classification would be a preferred option, these have had limited development and application across the full range of biodiversity in New Zealand. Therefore, recognising the need to incorporate physical variables, process variables and biota, we initially constructed a subjective, theoretical framework of environmental or physical drivers in New Zealand. This resulted in a three-variable hierarchy of temperature, moisture availability, and landform and soil gradients, which were divided sequentially down into categories or environmental classes. Vegetation classification literature and expert opinion were then used to align vegetation communities and ground cover classes with each of these environmental zones. A primary division within this classification was the conceptual distinction between zonal and azonal ecosystems, where zonal ecosystems are driven primarily by the physical, macroclimatic variables of temperature and moisture availability, and azonal ecosystems are primarily the product of process variables producing edaphic extremes (e.g., extreme rock and soil chemistry, extreme heat, and frequent disturbance). Thus, for the azonal section of the classification,

the three-variable abiotic framework was applied after these additional process variables, which included geomorphic disturbance, frequent fire, geothermal heat and extreme soil chemistry. In total, this classification led to 152 ecosystems being recognised—78 zonal and 74 azonal. This is just one thematic scale of classification, with coarser or finer levels possible depending on purpose. Transition from this mainly qualitative ecosystem classification to quantitative approaches will occur as biodiversity databases and statistical modelling permit improved fits with natural geographic patterns.

BBC Natural History Unit request

Claire Thompson, Researcher, Mini-landmarks New Zealand (claire.thompson2@bbc.co.uk)

I am writing to you from the BBC Natural History Unit in the UK where I am a researcher working on a forthcoming new seriBes about the flora, fauna and landscapes of New Zealand. I came across your New Zealand Plant Conservation Network website and thought it would be good to introduce myself.

To give you a bit more of an idea about the series; New Zealand is a BBC/NDR co-production to be filmed during 2014 and 2015. We will be exploring the incredible evolutionary history of New Zealand through its magnificent flora and fauna, landscapes, people and history. We aim to highlight the beauty of the environment there but also touch on the fragility of the land and the importance of preserving what has globally become recognised as one of the most important ecological treasures on our planet. The potential outreach in highlighting New Zealand's natural heritage is enormous, our previous BBC Natural History Unit productions, Planet Earth, Frozen Planet have been seen by over 100 million people worldwide. The series will be broadcast by the BBC and NDR in 2016.

We are looking to visually engage the audience in new and surprising ways and film never-been-seen-before behaviours using specialised equipment. I personally think plants have a great deal to offer in this respect and wondered whether you would have any ideas of interesting behaviours or spectacles for filming? We are particularly interested in species that show relationships between the landscapes (be it volcanic or mountainous, etc.) and the species that inhabit, or used to inhabit them (i.e., the moa adapted plants). We are very open to hearing new ideas on any theme, at the moment, in terms of plants in the series; we are looking at the alpine-adapted vegetable sheep, non-native species like roses, tree ferns and the magnificent kauri tree to name a few.

Would you mind passing this email around to your members to see whether anyone has any thoughts on new and exciting potential filming opportunities, please? We would be especially interested in hearing about plants which have actions, like exploding mosses, which make them better for filming!

Also, perhaps you could help with this query. One of our claims to our UK audience about New Zealand is that the light is not just visually different; it's even physically different over there in the Southern Hemisphere (due to reduced stratospheric ozone). There is a paper which supports this theory: (www.researchgate.net/publication/257548749_Comparison_of_Brewer_spectrophotometer_ultraviolet_data_from_similar_latitudes_in_the_Northern_and_Southern_Hemisphere)

However, I wondered whether it could also be applied to the flora of New Zealand, why non-native and originally northern hemisphere plants grow exceedingly well in New Zealand, how native kauri seedlings have their own special sunscreen when they are young and how New Zealand roses can grow larger than any rose in the UK northern hemisphere?

It would be great to hear your thoughts on this and if there's anyone in particular who you could suggest I get in touch with about this then please let me know.

Many thanks and best wishes,
Claire

UPCOMING EVENTS

If you have important events or news that you would like publicised via this newsletter please email the Network (events@nzpcn.org.nz):

10th Australasian Plant Conservation Conference (APCC10)

Conference: Hobart, Tasmania 11–14 November 2014: The organising committee invites you to submit an Abstract for **the Conference (APCC10). T**he four sub-themes are: Securing biodiversity, Prioritising actions, Animals in plant conservation, Engagement and communication in the modern world. Submissions close **5.00 p.m. 27 June 2014**. Conference Abstract Submission Form: www.anbg.gov.au/anpc/conferences/2014/APCC10_Conference_abstract_submission_form-2014.doc.	**More information:** www.anbg.gov.au/anpc/conferences/2014/index.html.

Auckland Botanical Society

Meeting: Wednesday 4 June at 7.30 for a talk by Bec Stanley titled '*Myosotis petiolata*'. **Venue:** Unitec School of Health Sciences, Gate 4, Building 115, Room 2005.	**Contact:** Maureen Young, email: youngmaureen@xtra.co.nz.
Field trip: Saturday 21 June to Mataia Estuary, Glorit.	**Leader:** Maureen Young, email: youngmaureen@xtra.co.nz.

Kaipatiki Project

Field trips: Saturday 14 June for 'Bush Walk & Talk - Waterfalls Series'. **Where**: North Shore, Auckland. **Time**: 9.30 - 11.30 a.m.	**For locations and to book online go to:** http://kaipatiki.org.nz/courses/bush-walk-and-talk/ or ph: 09 482 1172.

Waikato Botanical Society

Field trip: Saturday 14 June to Wairere Falls (combined with Rotorua Botanical Society).	**See below for details.**

Rotorua Botanical Society

Field trip: Saturday 14 June to Wairere Falls (combined with Waikato Botanical Society). **Meet:** the car park, Rotorua, at 8.00 a.m. or 9:00 a.m. in Matamata at the roundabout at the south east end of the main street (corner of Broadway and Tower Road). **Grade:** medium.	**Leader:** Kerry Jones, ph: 07 855 9700 (hm) or 0277 470 733 (mobile); email: km8j1s@gmail.com
Meeting: Monday 30 June at 6.00 p.m. for the Annual General Meeting followed by a talk by Dr Peter de Lange on his recent work in Sardenga, Italy.	**Venue :** DOC East Coast BOP Conservancy Office, 99 Sala Street, Rotorua (go in Scion north entrance (Forest Research) and turn left before the locked gates.)

Wanganui Museum

Meeting: Tuesday 3 June at 7.30 p.m. for a talk by Dr Roger Shand titled 'Dune geomorphology on western side of Wanganui'. **Venue:** Museum's Davis lecture theatre.	**Contact:** Colin Ogle, email: robcol.ogle@xtra.co.nz.
Meeting: Tuesday 1 July at 7.30 p.m. for a talk by Lyneke Onderwater about her botanical exploration of Mayor Island, Bay of Plenty. **Venue:** Museum's Davis lecture theatre.	**Contact:** Colin Ogle, email: robcol.ogle@xtra.co.nz

Wellington Botanical Society

Field trip: Saturday 7 June: Field trip Belmont Regional Park. **Meet:** 9.30 a.m. at woolshed at end of Stratton St, Maungaraki.	**Co-leaders:** Eleanor Burton, ph: 04 479 0479, mobile: 021 058 8324; Chris Moore, ph: 04 479 3924, mobile: 027 431 3789.
Meeting: Monday 16 June at 7.30 p.m. Talk by Julie Deslippe, School of Biological Sciences, Victoria University titled 'Plant-mycorrhizal interactions as foundational components of ecosystem structure and function'.	**Venue:** VUW Lecture Theatre M101, Murphy Building ground floor, west side of Kelburn Parade.
Field trip: Saturday 21 June. Te Marua Bush working bee. **Meet**: 9.30 a.m. at Te Marua Bush. **Bring:** weeding and planting gear: gloves, kneeler, weed bag, and weeding and planting tools, e.g., trowel, hand fork, grubber, loppers, pruning saw, jemmy.	**Co-leaders:** Glennis Sheppard, ph: 04 526 7450; Sue Millar ph: 04 526 7440.
Field trip: Saturday 5 July to Haywards Scenic Reserve, Lower Hutt. Meet at 9.45 at the end of White's Line East.	**Leader:** Julia Stace, ph: 04 385 4606, mobile: 027 446 3477; **deputy leader:** Sunita Singh, ph: 04 387 9955, mobile: 027 405 2987.

Nelson Botanical Society

Field trip: Sunday 15 June for a Pelorus fungal foray. **Meet:** 8.45 a.m. at the church steps or 10.00 a.m. at Pelorus. Please EVERYONE register with the trip leader.	**Leader:** Pam McConnellm, ph: 03 545 0975.
Meeting: Monday 16 June at 7.30 p.m. Talk by Rebecca Bowater titled 'Flying fungi and flora'.	**Venue:** Jaycee Rooms, Founders Park

Canterbury Botanical Society

Annual General Meeting: June 7 at 10.30 a.m. St Ninian's Church Hall, 9 Puriri St, Riccarton.	**Speaker:** To be confirmed.

Botanical Society of Otago

Field Trip: Saturday 7 June to Tavora Reserve. **Meet:** 9.00 a.m. from the Botany Department car park (rain date Sunday at 12 noon). Leader: Bastow Wilson.	**Contact:** Bastow Wilson, ph: 03 472 8999, mobile: 021 144 8228.
Meeting: Wednesday 11 June at 5.20 p.m. Talk by David Orlovich— 'Fabulous Fungi from Golden Bay. **Venue:** Zoology Benham Building, 346 Great King Street, behind Zoology car park by Captain Cook Hotel. Enter main entrance of Benham Building and go to Rm 215, the Benham Seminar Room, 2nd floor. Please be prompt as we have to hold the door open.	**Contact:** David Lyttle, ph: 03 454 5470.