



TRILEPIDEA

Newsletter of the New Zealand Plant Conservation Network

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Deadline for next issue:
Friday 19 April 2019

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

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NEW ZEALAND

PLANT OF THE MONTH, p. 2



Melicytus micranthus. Photo: Rowan Hindmarsh-Walls.

Seeking symbionts: fungi assist with germination studies of native terrestrial orchids

Jennifer Alderton-Moss^{1,2}, Karin van der Walt² and Carlos Lehnebach³

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Despite taking a name from a component of the reproductive system (*orkhis*; testicle), orchids are regarded as having some of the world's most elegant and decadent flowers. While popular globally in cultivation, issues such as illegal harvesting and habitat destruction have caused population decline, and even extinction, in several species (Cribb et al, 2003). With over 110 species, orchids are one of the 10 largest families of flowering plants in New Zealand, yet almost 35% of NZ orchids are of conservation concern (Frericks et al, 2018). The Lions Otari Plant Conservation Laboratory, established as part of the Lions Club of Karori's Centennial Legacy Project, provided us with the facilities to start research into the conservation of some of our native orchid species.



Fig 1: Flowering *Spiranthes australis* (formerly known as *S. novae-zelandiae*).

Establishing and maintaining collections in botanical gardens (*ex situ* conservation) is a vital aspect of plant conservation, particularly when there is difficulty preserving them in the wild. These collections create safety nets for vulnerable or threatened species, allowing reinforcement and reestablishment of wild populations. At the Lions Otari lab we have been working to create such a collection through seed banking. This will allow us to capture sufficient genetic diversity to support a species in a small space. Given the microscopic nature of orchid seeds, and its willingness to desiccate, it appears the perfect candidate for seed banking.

For there to be any value in storing seed, we must be able to bring seed out of storage and facilitate its growth into seedlings and eventually adult plants. It is well known that terrestrial orchids are a challenge for *in vitro* (in the laboratory) germination. Orchids' small seed size is ideal for wind dispersal, but this adaptation has meant the sacrifice of resources required for germination. In their natural environment (*in situ*) orchids will obtain resources from the soil assisted by a symbiont; a fungus that lives inside the orchid root. Although the fungus is easy to see under the dissecting microscope, its isolation and identification can be challenging. There are many microorganisms living inside and outside orchid roots, but not all have a helpful role in germination and cross-contamination of experiments is likely.

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PLANT OF THE MONTH – *MELICYTUS MICRANTHUS*

The plant of the month for March is the under-rated swamp mahoe, *Melicytus micranthus*, one of at least thirteen *Melicytus* species endemic to New Zealand. The species is found throughout lowland alluvial forests of the North Island, and scattered mostly in the east of the South Island, down to Southland. swamp mahoe is generally seen as a shrub, but can become a small tree reaching three metres in height.



Melicytus micranthus, 29 November 2013 near Long Beach, Otago. (left) Plant in flower; (right) Mature specimen. Photos: Rowan Hindmarsh-Walls.

The plants generally display a divaricating form with tightly interlaced branches, even in old trees. The bark is smooth and grey/white, similar to that of other mahoe species. The leaves are small (<2.5cm) and shallowly lobed around the margins with obvious venation on the underside. They have a distinctive lighter blotch on the upper side where the petiole (leaf stem) meets the leaf blade. The small white flowers are borne on young stems, with male and female flowers on separate plants. The fruit are small and dark purple with a white lump on the tip.

Melicytus micranthus is fairly easy to tell apart from other *Melicytus* species due to its leaf size and shape, but looks quite similar to some other small leaved divaricating plants such as kaikomako (*Pennantia corymbosa*) and *Raukaua anomalus*. Swamp mahoe can be separated from kaikomako by having leaves with mostly more than three lobes (kaikomako generally has just three), and by the lighter blotch at the base of the leaves. *Raukaua anomalus* can be distinguished by having quite hairy young stems and hairs on the leaf margins. Swamp mahoe is not obviously hairy, but has soft fuzz on the young stems.

The species is endemic to New Zealand, and has a conservation status of 'Not Threatened', as it is common and widespread, although more sporadic in the South Island. Due to the species' preference for fertile damp lowland forest, lowland forest destruction and clearance in the past has probably reduced its original abundance dramatically. The species can be grown from both seed and cuttings, and can tolerate sunny conditions or deep shade.

Melicytus is a moderate sized genus with species scattered throughout eastern Australia, Tasmania and parts of Oceania. The name *Melicytus* is derived from Greek *meli* (honey) and *kytos* (hollow container), referring to the staminal nectaries of the flowers, literally "honey-cave". The species epithet *micranthus* is derived from Greek *mikros* (small) and *anthos* (flower), meaning small flower.

You can view the NZPCN website factsheet for *Melicytus micranthus* at: http://www.nzpcn.org.nz/flora_details.aspx?ID=971

Go have a look and see if you can find it in a bit of bush near your place!

As part of our study, we investigated asymbiotic germination (germination without the use of associated root fungi) of orchid species of the genera *Acianthus*, *Corybas*, *Pterostylis*, and *Spiranthes* on a variety of media designed to provide nutrients for germination. After a few months, although many embryos had swollen and split their seed case, there was limited germination (defined as appearance of rhizoids/roots) from only one species. This species, *Corybas cheesemanii*, germinated on half strength Murashige and Skoog Basal Media and Knudson C Orchid Media. Our experiments did not finish here. Observation is ongoing to see if germination progresses into the next stages, i.e. leaf development and tuber formation.



Fig 2: *Pterostylis alobula* in habitat.

We have also been researching symbiotic germination of two orchid species; *Pterostylis cardiostigma* and *Spiranthes australis* (formerly known as *S. novae-zelandiae*). The first species is endemic to New Zealand while the latter is shared with Australia (Pace et al, 2018). Jonathan Frericks (Hutt City Council) has previously studied *S. australis* and managed to germinate its seeds and obtain flowering plants within two years. With his help we have isolated fungal pelotons (coiled hyphae within plants cells) from roots of each of these species. The pelotons were placed on a fungal isolation medium and after a few days we started the process of sub-culturing to achieve pure colonies. These isolates will be used to inoculate orchid seeds to test if they are appropriate partners for germination. Hopefully soon there will be lots of little orchids growing in our incubator!

The work we are doing on these species will help us to gain experience and training on seed germination techniques before starting work on threatened orchid species. It also provides the opportunity to



Fig 3: Fungi isolated from *Spiranthes australis* roots growing on Fungal Isolation Medium.

develop cryopreservation procedures tailored to NZ orchid seed and fungi, allowing long-term storage of both seeds and suitable fungal partners. While our native species may not have the most elegant and decadent flowers, the challenges they pose and the threats they face make them an exciting focus of our research.



Fig 4: Petri Dish containing Oat Meal Agar media, orchid seeds and a square of isolated fungi (in the red circle).

Acknowledgements

The Lions Club of Karori is thanked for their generous sponsorship which made the establishment of the research laboratory possible. Wellington City Council and Victoria University have provided a summer scholarship to Jennifer Alderton-Moss. Jonathan Frericks has provided training in fungal isolation procedures.

References

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- Pace MC, Giraldo G, Frericks J, Lehnebach CA & Cameron KM (2018): Illuminating the systematics of the *Spiranthes sinensis* species complex (Orchidaceae): Ecological speciation with little morphological differentiation. *Botanical Journal of the Linnean Society* 189: 36–62.

An afternoon with John Dawson

Matt Ward, NZPCN Secretary

Upon hearing the news of John Dawson's passing I thought that this article may be a thoughtful tribute to someone I regarded as a mentor and an extremely nice man. If you did not have the pleasure of a meeting with John, this is the description of one of mine from July 2015. I wrote it down at the time because it was so special.

The effort in being allowed to talk to John was worthy of a mention as Judy was quite protective of him at this stage. "His memory isn't what it used to be" was what she was alluding to. Anyone who had met John Dawson would know how approachable and easy going he was. He regularly used to take walks and talks through the Otari-Wilton Bush where I had met him at least four times prior. Many people will have shared a stroll with John and enjoyed his simple yet informative unpretentious delivery of New Zealand plant knowledge.

Upon arrival at the Dawson's Crofton Downs home, I was welcomed in by John, as Judy had gone to the dentist. Their live at home son also greeted me asking "Are you a botanist too?" I coyly replied, "Trying to be".

John proudly showed me his remaining family via his wall of photos in the office. "This one lives in California with his wife and our two grandsons" he said. John was extremely proud of his grandkids and amazed at the blondness of one of the boys. "He won't get lost in a mall" he added.

We sat down in his modest office with an amazing vista of the Wellington harbour minus the water. My purpose to visit was to say hello, and get a couple of books signed, one of which was for the NZPCN 2015 charity auction I was organising at the Dunedin Conference.

John immediately started to tell me about the framed pictures on the walls, most of which were gifts and awards for his outstanding contributions to the world of New Zealand Botanical literature. I even noticed a print of the outstanding NZPCN logo *Trilepidea adamsii*, a now extinct mistletoe. This led us into John's discussion about how most botanical drawings and art had been done by women, as the men did the botanical and taxonomic fieldwork in the early days.

I recollected a field trip I had taken John on through the Jack's Bush remnant in Waikanae in 2011. I mentioned that he had gotten quite ready to finish up as we started to fight our way through some kiekie and supplejack toward the end of the adventure. John remembered the day well, even recalling that I had something to do with H.E. Connor. John then started to tell me all about why he became interested in plants. He started with telling about growing up in Eketahuna. His favourite childhood memory and in his mind the best thing ever – sitting atop a tree as the sun rose through the mist and the colours of a new day bloomed and radiated before his eyes. At school John believed he was average and not very interested, "My report cards never had anything extraordinary on them". He claimed a lady teacher had seen him looking at plants and started to keep him interested in a day's schooling by showing him books with plants and their descriptions in them (not likely NZ species at this stage in Eketahuna). John began to take an interest in the plants more closely, using lenses and such to understand their workings and details. Once old enough to leave home he decided that he would have to go to university if he was going to make anything of himself as a plantsman. Of course, this led to his career in publishing numerous scientific papers and botanical books. John was Associate Professor of Botany at Victoria University until his retirement in 1988.

John was also very keen to learn what had got me into the plant world as well.

Judy then arrived back from the dentist and promptly asked us if we would like a hot drink. Judy then joined us in conversation, asking me "have you got John to sign your books yet?" "Not yet" I replied, to which she suggested you had better, before he forgets...

Unloading two of my own books and the one for the auction, John immediately showed interest in my treasures. Taking my copy of *Forest Vines to Alpine Plants* in hand and exclaiming "Well this has seen

some use, eh". I laughed as it was a retired library book that a friend had given me whilst at university when he noticed I was becoming plant orientated. John promptly signed it and handed it back and then grabbed the auction book, field version of New Zealand Forest Trees, and signed it too. "They didn't even ask me about this one you know," he said. "What" I exclaimed, "Maybe the big book was so heavy they needed a cartable version" I replied. "Well, of course, imagine carrying the big book about the place" John said, laughing as he spoke. Then something amazing happened. John saw the 'big book' New Zealand Trees and he immediately hugged it. John then wiped the cover like it needed drying. "What do you think of this picture?" he asked, referring to the cover. "It's amazing like all those inside" I said. "Yes, but neither Rob (Lucas) or I took it", he replied. John then started through each page of the book explaining each setting in prodigious detail and with a sparkle in his eyes, as though the book was his whanau, another mokopuna possibly. Each photo made him recollect and gain my appreciation and admission as to the quality of the shot. "Do you know how hard it is to take such a shot?"; he would say. "I do", I would respond, being a botanical photographer of sorts myself. John would say whether he had been on the mission that resulted in the image or whether he had explained the location for Rob to find. As for the text, he stated "I found very early on that you can explain in detail quite technical things in quite a simple manner". That fact, of course, demonstrated one of John's accomplished skills. All of his books are easy to follow, make sense, and lack the need for a glossary at hand. John continued to hug the book as he turned the pages, ensuring that my copy would be looked after carefully as the pages turned and landed precisely on the prior.

Judy then appeared and again asked whether John had signed all my books yet. I completely understood Judy's concern by now. John was 87 and, even though not showing any signs of tiring, it had been two and a half hours since I arrived. I politely butted into John's re-living and hugging of my copy of "New Zealand Trees" asking if he would mind signing the copy for me, as it was my own copy. John said, "But of course" and promptly signed "To Matt, my Baby, John Dawson 28/7/15". I was elated. Judy asked me to change a light bulb for her before I went, which was the least I could do. After all the Dawsons had allowed me into their family home to share an afternoon with John...John Dawson passed away peacefully 11 March 2019, aged 91.

ASBS-NZPCN 2019 Conference in Wellington: Updates

Planning and organising for the 2019 conference are now in full swing! Following up from our presentation at the 2018 ASBS Conference in Brisbane (which was then published as an article in the [Dec 2018 ASBS Newsletter](#)), we've got a few updates to share with you regarding the 2019 conference.

2019 Conference at a glance

- Conference title: "Taxonomy for Plant Conservation – Ruia mai i Rangiatea"
- This is a joint conference of ASBS and the [New Zealand Plant Conservation Network](#)
- Our venue is the [Museum of New Zealand Te Papa Tongarewa](#), Wellington, New Zealand
- Dates: 24–28 November 2019
- Overview: 5 full days including presentations, workshops, field trips, and public events.
- Follow us on [Facebook](#), [Twitter](#) and [Instagram](#)
- Get more details and subscribe to updates on the [conference website](#)
- Please support our [sponsors](#)!

Important dates to diary

- From now: If you are planning to collect plants in New Zealand during your stay, make sure you get your permit applications in soon. See [our website](#) for more details.
- From now: Source some items for our silent auction (see related article in this newsletter).
- Early April 2019: The conference website will be fully updated with registration costs, field trip and workshop options, and other important information to help you plan. Get helpful information

now on [transport and accommodation options](#) from our website—if you know you are coming, book accommodation now.

- 23 April 2019: Early-bird registration (with reduced registration fees) will be officially open!
- 23 August 2019: Abstracts are due. Early-bird registration closes. Standard fees will apply from this date.
- 24-28 November: The conference is on!
- Various dates from Oct–Dec 2019: A number of other conferences and events of potential interest to conference attendees are happening in Wellington and elsewhere in New Zealand around the same time as our conference. For those planning to come to the conference, why not stay a bit longer in New Zealand to take advantage of these other opportunities? Check out the latest list on [the conference website](#).

Confirmed workshops

We will be offering between 4 and 8 half-day and full-day pre-conference workshops on Sunday 24 November. Please note: all workshops will need to have a minimum number of participants to go ahead, and spots will be limited, so register early to make sure you don't miss out on your first choice. So far, we can confirm the following workshops, with more likely to be confirmed soon. For more information on these and other workshops, please check the conference website regularly from early April.

Workshop #1: Wikipedia Edit-a-thon on Australasian endangered plant species

An Edit-a-thon is an all-day attempt to improve Wikipedia's coverage of a particular topic. Led by experienced Wikipedia editors [Mike Dickison](#) and [Siobhan Leachman](#), participants will learn how to edit pages, correct mistakes, add references, and upload photos. Complete beginners are welcome; training and troubleshooting is provided. This edit-a-thon will focus on adding content on **New Zealand and Australian endangered plant species** to Wikipedia. Our goal for this full-day workshop is to collectively improve the representation of Australasian endangered plants in Wikipedia.

Workshops #2 & #3: Botanising with iNaturalist—workshops for beginners and advanced users

[iNaturalist](#) is the world's biggest online community dedicated to recording all species. Being a botanist in the iNaturalist community is both great fun and useful; we connect people to nature and grow both botanical knowledge and future botanists. There will be two half-day iNaturalist workshop options, a morning workshop for beginners, and an afternoon workshop for advanced users. You may sign up for one or both! The morning workshop will give you an introduction, starting from scratch and get you up to speed as both an observer and an identifier on iNat. The afternoon workshop will focus on how to take your iNat use to the next level, including bulk operations, curating the iNaturalist species tree and nomenclature, managing projects, dealing with threatened species, and other advanced functions. Both workshops will be led by [Jon Sullivan](#), who is the site admin of [iNaturalist NZ–Mātaki Taiao](#) and a trustee on the charitable trust that operates iNaturalist NZ. His day job is an ecology lecturer at Lincoln University.

Workshops #4 & #5: Plant identification workshops

[Otari Native Botanic Garden and Wilton's Bush Reserve](#) is the only public botanic garden in New Zealand dedicated solely to native plants. It is also home to the largest forest remnant in Wellington City. Come along and experience this national treasure as we host two half-day workshops running morning and afternoon on the day. These workshops will give participants the opportunity to look closely at New Zealand ferns in the field and under the microscope with the Te Papa Botany team (WELT), and to do some field botanising in the forest with the [Wellington Botanical Society](#). There will be guided walks telling the story of the forest, gardens, and the unique New Zealand flora. Botanists from Landcare Research and the Department of Conservation will also be helping out on the day. It will be a fantastic day for beginners and experts alike!

Workshops #6 – #8 to be confirmed

Confirmed field trips

Field trip organisers: Anita Benbrook and Tim Park

We can now confirm we will have a total of five different, full-day field trips on offer for Wednesday 27 November. Please note: all field trips will need to have a minimum number of participants to go ahead, and spots will be limited, so register early to make sure you don't miss out on your first choice. For more information on these and other field trips, please check the conference website regularly from early April.

1. Old-growth forests of Wainuiomata and Remutaka (travel by bus; good fitness required)
2. Coasts, freshwater lake and lowland beech forest across the harbour (travel by bus; good fitness required)
3. Rugged south Wellington coast & ecological restoration (travel via 4WD vehicles on rough terrain)
4. Matiu/Somes Island plants and wildlife (travel via ferry; easy walking)
5. Otari-Wilton's Bush, Te Papa herbarium and Bush City (travel via bus; easy and accessible to all).

Please don't hesitate to get in touch with us (plants2019nz@gmail.com) with any queries or ideas you have. Looking forward to seeing as many of you as possible in November in Wellington!

Heidi Meudt & Rewi Elliot - 2019 ASBS-NZPCN joint conference co-organisers

2019 ASBS-NZPCN Conference Charity Auction: Items required! Can you help?

Matt Ward, NZPCN Secretary – mattwardward@gmail.com

I am happy to announce we will be having a charity auction at the 2019 New Zealand Plant Conservation Network (NZPCN) and Australasian Systematic Botany Society (ASBS) "Taxonomy for Plant Conservation – Ruia mai i Rangiatea" joint conference running this November in Wellington, New Zealand. The charity auction is a fundraiser that the NZPCN has carried out successfully at our conferences since 2013. The funds raised from the auction will be split 50/50 between our two societies and used to bolster the allocated research funds of each society. The NZPCN will split its share of the funds raised between the 'David Given Scholarship' and the 'John Sawyer Plant Conservation Fund' (www.nzpcn.org.nz/page.aspx?nzpcn_awards).

The ASBS will use the funds raised to bolster its Scientific Research Awards, which currently include the 'Hansjörg Eichler Scientific Research Fund' and the 'Marlies Eichler Postdoctoral Fellowship' (<http://www.asbs.org.au/asbs/research-funds/index.html>).

The auction will be silent, allowing some level of mystery as to whom you may be bidding against when you wish to win a must-have item. Each conference attendee will be given a number in their conference pack for use when bidding. Bidding will simply involve adding your number and the dollar value you wish to bid on a sheet next to the item, which will be on display at the conference. It's a fun and exciting way to support your societies! Depending on the number of items up for grabs, the conclusion of each auction may occur in a staggered fashion to prevent any conclusion confusion. More running details will be established closer to the date.

To make the auction a success, we rely on worthy donations from individuals, businesses, institutions and agencies. This is where you can help! If you can donate an item, or have a suggestion for a donation, please let me know. Items which garner substantial interest include artwork, experience vouchers, books, outdoor gear, handmade uniqueness, etc. You can see what was on offer at our 2015 conference here: http://www.nzpcn.org.nz/page.aspx?nzpcn_events_conference_2015_auction. Te Papa Press has kicked things off by kindly donating three fantastic NZ-themed hard back books.

There is an excellent chance of the silent auction having extra-interesting items this year with the trans-Tasman tie-in, so let's make the auction a ripper and raise as much as possible for our societies' worthy funds. Please contact me on the above e-mail address with any queries or to make your donation!

Revision of “Above the Treeline: a nature guide to alpine New Zealand.”

Alan Mark

My co-authored book: “Above the Treeline: A nature guide to alpine New Zealand” is now out of print and the publishers, Pottan & Burton, have decided to republish it in a revised and slightly enlarged version, with somewhat more space allocated to the images.

This provides an opportunity to have more of the plants illustrated and also to improve some images where possible. Accordingly, I invite anyone who wishes to contribute images to contact me for further details at: alan.mark@otago.ac.nz.

UPCOMING EVENTS

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






Tobins Face Trial Planting Site

Arrowtown Chopper Volunteers (with support from AVA & AWG) will plant 500 natives (during Autumn 2019) and 200 exotic trees (during Spring 2019). This trial allows us to understand that we are planting the right trees in the right place at the right time. You can help the volunteers on the day or with funding via givealittle.

Autumn Plant @ 10am, 23rd April, meet at the Ford Street Carpark, next to Tobin's Track

More information: <https://www.facebook.com/arrowtownchoppers/>

Donations: <https://givealittle.co.nz/cause/arrowtown-re-vegetation-trial>

Botanic Gardens Australia New Zealand (BGANZ)

Plants from the past – Plants for the future: 9th Congress. Te Papa (Wellington). 20–23 October 2019

This conference will explore the role of Botanic Gardens in science communication & story-telling, plant conservation, managing collections and displaying plants. Join us – or submit an abstract to contribute your ideas. Botanic Gardens Australia and New Zealand (BGANZ) is the peak body representing all botanic gardens in Australia and New Zealand. BGANZ promotes the interests and activities of all Australian and New Zealand botanic gardens through its 140 member gardens, enhancing the state of botanic gardens internationally. The 9th BGANZ Congress will be attended by over 20 Directors, General Managers and Presidents of botanic gardens from Australia and New Zealand. More than 50 botanic gardens are expected to attend.

More information: <https://www.confer.nz/bganz2019/>

Rotorua Botanical Society

Field Trip: Sunday 7 April to Athenree Saltmarsh and Wetland near Waihi Beach (combined with Waikato Botanical Society).
Meet: 8.00am at the Convention Centre carpark, Fenton Street, Rotorua or 9.30am at the Steele Road DOC Athenree Wildlife Refuge Reserve carpark (Turn right into the carpark before you go over the Waiau River bridge). **Grade:** Medium. **Bring:** Gumboots for wetland/saltmarsh.

Leader: Paul Cashmore,
email: pcashmore@doc.govt.nz,
ph: 07 349 7432 or 027 650 7264
(mob).

Whanganui Museum Botanical Group

Field Trip: Saturday/Sunday 6–7 April to Tongariro National Park, with accommodation at the Ruapehu Lodge, Tongariro Village (\$60.00 per person). **Bring:** Your own breakfast and lunch food plus a contribution towards the two pot-luck dinners.

Leader: Margi Keys,
email: margikeys93@gmail.com,
ph: 06 344 1250.

Wellington Botanical Society

Field Trip: Saturday 6 April for Wellington Botanic Gardens Bioblitz. Meet: 9.00am at the Treehouse main entrance or the Cable Car Kelburn terminus.

Leader: Eleanor Burton, email:
esmeraldadoris93@gmail.com,
ph: 04 479 0497.

Meeting: Monday 15 April at 7.30pm for a presentation on 'New Zealand's biodiversity strategies: looking back and looking forward' by Dr Wren Green, Environmental Consultant.

Venue: Lecture Theatre M101,
ground floor Murphy Building,
west side of Kelburn Parade.

Canterbury Botanical Society

Field Trip: Saturday 6 April to Rakaia Gorge to search for Climbing Broom. **Meet:** 8.45am at the Yaldhurst hotel carpark, just past the Pound Road roundabout on the south side of the Old West Coast Road or at 9.30am at the Hororata Café. **Grade:** A slow scramble through untracked scrub. **Bring:** \$20.00 for fuel reimbursement, lunch and something to drink, warm jacket, sun hat and boots. A pruning saw and glyphosate will come in handy also.

Leader: Alice Shanks,
email alice@caverock.net.nz,
ph: 027 366 1246.

Field Trip: Saturday 27 April – City Nature Challenge - Christchurch. This is a special trip for Botanical Society members to join people around the world taking part in the City Nature Challenge. It will cover the whole of the Christchurch district, including Banks Peninsula. **Meet:** 9.00am at Halswell Bowling Club carpark (301 Halswell Road) for carpooling. **Grade:** Moderate, with off track walking on uneven ground. **Bring:** A camera or a smartphone with the iNaturalist app installed on it, lunch, drink, suitable footwear, and clothing for wet/cold/hot/dry weather and \$10.00 for fuel reimbursement to drivers.

Leader: Melissa Hutchison,
email: melissa@tenax.co.nz, ph:
021 041 5797.
Please contact Melissa if you
intend to participate.

Botanical Society of Otago

Meeting: Wednesday 10 April at 5.20pm for a presentation on Willows and their uses by Maia Mistral.

Venue: Room 215, 2nd Floor,
Zoology Benham Building, 346
Great King Street.

Field Trip: Saturday 27 April to the Livingstone Wetland Restoration Project, Taieri Mouth. **Meet:** 9.00am at the Botany Department carpark. **Bring:** Pen/pencil and notebook.

Contact: Gretchen Brownstein,
email: brownsteing@landcareresearch.co.nz, ph: 021
065 8497.
