



# TRILEPIDEA

Newsletter of the New Zealand Plant Conservation Network

No. 181

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Deadline for next issue:  
Tuesday 15 January 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](mailto:events@nzpcn.org.nz)

Postal address:  
c/- 160 Wilton Road  
Wilton  
Wellington 6012  
NEW ZEALAND

## PLANT OF THE MONTH, p. 2



*Elaeocarpus dentatus*.  
Photo: Jeremy Rolfe.

## New threat assessment of New Zealand's lichens published

Peter J. de Lange ([pdelange@unitec.co.nz](mailto:pdelange@unitec.co.nz)) and Dan J. Blanchon ([dblanchon@unitec.co.nz](mailto:dblanchon@unitec.co.nz)), Environmental & Animal Sciences, Unitec Institute of Technology, Auckland

The Department of Conservation recently published a new assessment of the conservation status of New Zealand's lichens (de Lange et al., 2018). New Zealand has a surprising diversity of lichens—the new assessment lists 2026, and that's just a drop in the bucket as researchers discover more and more species around the country.

Although lichens add the splash of colour to our forests, coastal shorelines and even our urban brick and concrete landscape, few people appreciate them for what they are. Lichens are communities comprising a fungal superstructure in which are embedded

algae, cyanobacteria and even yeasts. All of these very different organisms work together as the lichen we see to eke out an existence, in a bewildering array of habitats from the rocks in the dry valleys of Antarctica, to the summit of Aoraki/Mt Cook, and even on the plates of barnacles on our shorelines. Lichens are not really species but we treat them as such and, because it is the fungus that forms the super-structure and mostly has the highest diversity, it is the fungi that we use to classify them.



*Caloplaca maculata* on Chatham Island; At Risk – Naturally Uncommon. Photo: Peter J. de Lange.

Some lichens, of course, can be pests; most people will know the ones that colonise the bark of deciduous fruit trees, or grow on our tin roofs or windows but most of them are less obtrusive. Indeed, many of them break down rock to form the basic ingredients of future soils, whilst others fix atmospheric nitrogen and help fertilise our indigenous and even plantation forests. Lichens also act as an early warning system of air quality because some of them are very sensitive to atmospheric pollutants whilst others flourish in smog. In this way, lichens can be used to monitor our environment.

However, lichens can also go extinct and, in New Zealand, this is beginning to happen. Already we are seeing losses through gross habitat modification following coal mining and the conversion of tussock grassland to dairy farms. Although the studies to date are in their infancy, there is some evidence to suggest lichen diversity is dropping in urban areas, a decline which could be linked to air quality.

The latest lichen conservation assessment commissioned by the Department of Conservation brought together New Zealand lichenologists, their graduates and students, and worked in collaboration with overseas experts from Australia, Germany and the USA. The assessment panel found that 16 lichens warranted listing as 'Threatened', mostly because of ongoing loss of habitat, though a few are experiencing

## PLANT OF THE MONTH – *ELAEOCARPUS DENTATUS*



*Elaeocarpus dentatus* var. *dentatus*. Photos: Jeremy Rolfe.

The plant of the month for December is the mighty hinau, *Elaeocarpus dentatus*, one of two *Elaeocarpus* species endemic to New Zealand. The species is divided into two varieties, *E. dentatus* var. *dentatus*, and var. *obovatus*. Variety *dentatus* is found throughout the lowland forests of the North Island and in the South Island down to Christchurch in the east, and Whataroa in the west. Variety *obovatus* is found only from the Marlborough Sounds to North-West Nelson. Hinau trees can reach 15–20 m high and reach a trunk diameter of at least 1 m, but are not generally the dominant tree species. The bark is hard and smooth with distinctive longitudinal fissures on mature trees. The leaves are quite harsh to the touch with serrated margins and domatia pits (hairy pits) on the underside. There are two leaf forms; those on juvenile plants are much longer and generally thinner than the adult leaves. The white flowers are borne in racemes and make for a spectacular sight on heavily laden trees. The dark purplish green fruit mature in autumn and are great food for kereru. Hinau fruit were also a very important food source in pre-European times, with the nutritious floury flesh being separated from the hard seeds and either boiled as a gruel or fashioned into bread like cakes and cooked.

Hinau is a distinctive species in Aotearoa and is easily distinguished from the only other native *Elaeocarpus* species, pokaka, *Elaeocarpus hookerianus*, by its lack of filiramate (branching at a very wide angle with stiff intertwined stems) juvenile leaves, no divaricating juvenile plants and larger leaves. *Elaeocarpus dentatus* var. *dentatus* has a threat ranking of 'Not Threatened' because it is common and widespread; variety *obovatus* is ranked as 'Data Deficient' because little is known about it, or whether it is a distinct taxonomic entity. The main threats to the species are likely to be browse pressure from possums and deer and lowland forest clearance. The species is easily grown from seed, but is suitable for only large gardens; young plants prefer partial shade until well established.

The genus *Elaeocarpus* is very large with around 350 species scattered throughout Asia and Oceania. The name *Elaeocarpus* is derived from Greek—*elaia*, meaning olive, and *karpos*, meaning fruit, so olive fruit. The species epithet *dentatus*, means toothed, referring to the toothed leaves; *obovatus* refers to the leaves of that variety, which are widest beyond the midpoint of the length.

You can view the NZPCN website factsheets for *Elaeocarpus dentatus* at: [http://www.nzpcn.org.nz/flora\\_details.aspx?ID=1830](http://www.nzpcn.org.nz/flora_details.aspx?ID=1830) [http://www.nzpcn.org.nz/flora\\_details.aspx?ID=7575](http://www.nzpcn.org.nz/flora_details.aspx?ID=7575)

unexplained declines that need further study. One, as yet unnamed, species of jelly lichen may even be extinct as the sole known population was lost following coastal erosion of its cliff-side habitat. A further 259 lichens were assessed as 'At Risk', with 10 of those deemed to be in 'Declining' populations. Amazingly, only 644 lichens were deemed 'Not Threatened'; the remaining 1107, or 55% of New Zealand's lichens, were assessed as 'Data Deficient'. This means that there is simply not enough information available for a conservation assessment to be made.

The large number of 'Data Deficient' lichens highlights an ongoing problem; there are simply not enough lichen experts in New Zealand to survey for and document our lichen diversity. Increasingly, New Zealand people need to work with international experts to find out what lichens we have, and whether those we thought were the same as ones found overseas really are. Conversely, New Zealand is continuing to awe and amaze the world lichen community as the unexpected keeps on being discovered. For example, one Spanish visiting researcher examining a lichen that lives on barnacles (*Collemopsidium*) discovered in a single day's random sampling along western Auckland's shoreline several new species and, in the process, recognized that the single name, *C. sublitorale*, that we had been using for all of this diversity was probably wrong.



*Collemopsidium* sp., Piha Beach. Photo: Peter J. de Lange.

Though the new report actually adds more 'Data Deficient' lichens to the list, these gains have come from a raft of new discoveries. Inroads are being made into past 'Data Deficient' listings as more and more New Zealand people are taking an interest and looking. However, the need for more locally trained lichenologists is a key issue facing New Zealand as the uses of lichens in monitoring air pollutants, fixing nitrogen, and potentially removing toxic waste are being better recognized.

The call for more lichenologists is, however, being met. Unitec's Bachelor of Applied Science degree teaches facets of lichenology and this is starting to have an impact; students and graduates have been doing research on the lichen diversity of mangrove ecosystems and the reserve network administered by the Auckland Council. The result has been the discovery of a raft of new species and species records for New Zealand. Inroads have also been made into the previous 'Data Deficient' listings, as students have undertaken surveys as part of their course work, to try to resolve the status of these conservation question marks. Unitec also operates New Zealand's only dedicated lichen herbarium; this year the herbarium reached over 10,000 specimens (de Lange & Blanchon, 2018) keeping a record of the lichen diversity of the North Island, especially, but also many of New Zealand's outer islands, like for example the Kermadec and Chatham Islands.

Research is also underway to see if our lichens can be transplanted or 'sown' into restoration projects, e.g., Leddy et al. (2018). This research, appreciating that lichens play a vital role in our natural ecosystems, has focussed on finding techniques to 'plant' lichens into reforestation sites.

The next lichen status assessment is due in five years' time. It will be interesting to see what advances and changes will be made by then. The new conservation status report is available at: <https://www.doc.govt.nz/about-us/science-publications/series/new-zealand-threat-classification-series/>

## References

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## Slight shows might to take the title in 2018! NZPCN Favourite Plant poll

Matt Ward, NZPCN Secretary ([mattward@gmail.com](mailto:mattward@gmail.com))

The 2018 New Zealand Conservation Network Favourite Plant election concluded on 30 November 2018. A total of 55 species were voted for and, for the first time, there were three serious contenders battling it out for the title. The top three challengers garnered a whopping 72% of the total vote, creating a battle with numerous lead changes that saw a new winner. For the first time since the vote started in 2002, an orchid has taken it out!!!

The winner of the 2018 Favourite Plant vote with 31.2% of the votes is pink fingers, pink orchid—*Caladenia alata*

*Caladenia alata* is an indigenous orchid species, categorised in 2018 as “At Risk – Naturally Uncommon” (de Lange et al. 2018). The ‘fairy orchid’, as it is known in Australia, is found in the heathy forest and coastal scrub of Queensland, New South Wales, Victoria and Tasmania. In New Zealand, it is found mostly in the north of the North Island, although sightings have been recorded as far south as Horowhenua and the Nelson Lakes. However, its actual distribution is not accurately known because this species was recognised only about 30 years ago.



Fig 1. *Caladenia alata* plant.  
Photo: Jeremy Rolfe.

Flowering from August, early for a *Caladenia*, and being very slight at only 100 mm high with a 10 mm diameter pink or white flower (fig. 1), it is easily overlooked. When you see a flowering specimen, its beauty is undoubtable. A macro lens may be required to fully appreciate this rarity, like all of our orchids, perfectly formed but



Fig. 2. *Caladenia alata* flower.  
Photo: Jeremy Rolfe.

neither showy or apparent. The flower is a complex structure of a central column wrapped by a labellum and surrounded by 2 petals and 3 sepals (fig. 2). The labellum has two rows of disk calli and pink bars traversing it, then it culminates in a curled under triangular labellum tip. The factors distinguishing it from other *Caladenia* species is the bright sulphur yellow marginal calli at the mid lobe of the labellum.

A favoured habitat of this species are nutrient poor clay soils below several of our manuka and kanuka species. Potentially, if manuka and kanuka are heavily depleted by myrtle rust, this little orchid may struggle even more through associated habitat loss; only time will tell.

Like many of our native orchids, the name is often revised and confused, leaving everything in a bit of a haze; this species is no different. It is believed to have been first described by Robert Brown in 1810 from specimens collected in Australia. In New Zealand, it was thought our specimens were different and were not named, but clumped with *Caladenia minor*, by J.D. Hooker. Then more confusion ensued until *Caladenia minor* var. *exigua* was used by T.F. Cheeseman in 1906. This state continued with more confusion and renaming until in 1988 Australian David Jones recognised that the New Zealand *Caladenia alata* had had a bunch of names but was the same as the Australian specimens. This led to the last name change to *Petalochilus alatus* which you will find in the fantastic book “*Wild Orchids of the Lower North Island*” (de Lange et al. 2007). Recently, the name R. Brown first used has been reinstated, hopefully for good. (And we wonder why people struggle with orchid identification and names.) In the meantime, because the name and description were so fluid, the true identity and therefore distribution have also been confused since many historic botanical records are not likely to be accurate.

With that, it's time to hear what the voters for this year's winner had to say. Many people were interested in the beauty of the orchid, wanted an orchid to win, and more attention to be paid to our native orchid flora in general.

Tim wrote: *"If you have ever seen one of these, or in fact any of our orchids you would vote for it too. Always a treat to see and enjoy. Good luck little one."*

Mike wrote: *"C. alata is a beautiful native orchid, which, were it larger would doubtless be better known. This in fact applies to many of the NZ orchid species which seem to have become rather less flamboyant since they migrated from Oz."*

Serena wrote: *"Quite beautiful and brave! I love the way it charges ahead and flowers early in the spring. I'll be looking out for it."*

Mark wrote: *"New Zealand's 200+ orchid species are totally under-recognized by the general public which means they are also missing out on some of New Zealand's most beautiful flowers due to their lack of size and relatively unknown status."*

The 2018 runner up, garnering 30.5% of the vote, was another potential and worthy winner the endangered wigglywig, mingimingi, shrubby tororaro, *Muehlenbeckia astonii*. This species is described as 'Threatened – Nationally Endangered' (de Lange et al. 2018), the second-most endangered category on our National Threat Classification list. This species has had a tough time of late when a Canterbury farmer killed one third of the known population to plant oats. This matter is still in a legal process to find some resolution to prevent further losses. The area cleared by the Canterbury farmer was the largest population of this species. Other very much smaller populations are dotted about the eastern part of the South Island from southern Christchurch to Wainuiomata in the North Island. An attractive divaricating shrub (fig. 3), it is well known in the Wellington region because of its use as a traffic island plant where it appears to thrive. A fantastic food source for lizards and birds, this species is a must for your garden. The continued reduction of this species' wild population is mostly through habitat fragmentation and loss; it also suffers from trampling, predation, disease and recruitment failure because of its dioecious sexual nature. This species provoked some very passionate support from its voters; a few comments are featured below.



Fig. 3. *Muehlenbeckia astonii*. Photo: Jeremy Rolfe.

Jason wrote: *"Going, going, gone... This plant is mostly, if not entirely, found on private property and as it is not a tree or forest species it is not viewed by some as important. It could very easily and quietly slip into "extinct in wild" status. Let's not stand by and watch that happen."*

Robin wrote: *"This plant deserves an award for tenacity. Despite being browsed, driven over or burnt, it's capable of rebounding. It's also become much loved in cultivation all over NZ. You can see it in traffic islands and in café gardens. Fantastic!!!"*

Alice wrote: *"This wiry shrub knows how to survive in harsh, hot, dry, windy places. Now it is in decline in the wild, eaten out by goats and stock, failing to set seed and disperse. It is our fault if the natural populations fade away, to live on as a piece of landscaping, as hedges and cute topiary."*

In third place, reaping a respectable 10.3% of the vote, is another endangered species, ramarama, *Lophomyrtus bullata*. This species has unfortunately been promoted to the "Threatened – Nationally Critical" category in our most recent threatened plant list (de Lange et al. 2018), and is the most

susceptible of our native species to myrtle rust. Most people have probably seen ramarama in the wild and thought, wow what an amazing leaf. This species, a member of the myrtle family, has very showy flowers similar to pohutukawa, yet smaller and white (fig. 4). The future of this species is somewhat uncertain, being found mostly in North Island with only a few populations in South Island; the effects of myrtle rust cannot be easily measured or estimated. Here's what the voters had to say:



Fig. 4. *Lophomyrtus bullata*. Photo: Jeremy Rolfe.

Peter wrote: “Once upon a time I never gave ramarama much regard. Too common and easily identified because of the bullate leaf. Ecologically mostly minor ‘noise’ in our ngahere. Now though, that this is one of the key species being severely impacted by myrtle rust, I am reminded of the passenger pigeon—so common its flocks darkened the skies of the USA, no one gave it any regard, and now its extinct. As the passenger pigeon so nicely demonstrates, even ‘commonplace’ can go extinct and quickly. Let’s hope ramarama and rohutu—an endemic lineage of New Zealand Myrtaceae don’t go under. I don’t wish to be pessimistic here but frankly I am right now. I want my future whanau to see this plant as ‘commonplace’ not as dead bits in herbaria.”

Waipana wrote: “Considering it is showing to be the most susceptible to MR... yes, it definitely has my vote ... resistant individuals or not the population of this species could be severely reduced as a result of this pathogen... I hope it is still abundant for our mokopuna and future generations.”

Lindi wrote: “This plant’s beauty speaks for itself with its ‘globuled’ mottled, multi-coloured leaves and beautiful flowers. It is also under severe threat from myrtle rust so who knows how many will still be around in the future.”

This year the ‘Top 10’ (see Table 1) were all new competitors compared with those that made the list in last year’s poll. There was definitely more of a focus on the threatened plants that have now been recognised, thanks to a pathogen and some carelessness.

New Zealand’s top 10 favourite plants 2018			% of vote
1.	Pink fingers, pink orchid	<i>Caladenia alata</i>	31.2
2.	Mingimingi, shrubby tororaro, wiggwig	<i>Muehlenbeckia astonii</i>	30.5
3.	Ramarama	<i>Lophomyrtus bullata</i>	10.3
4.	Ongaonga, tree nettle	<i>Urtica ferox</i>	3.6
5.	Kotukutuku, tree fuchsia	<i>Fuchsia excorticata</i>	2.6
6.	Manuka	<i>Leptospermum scoparium</i> var. <i>incanum</i>	1.5
7.	Pink broom	<i>Carmichaelia carmichaeliae</i>	1.5
8.	Kohekohe, New Zealand mahogany	<i>Dysoxylum spectabile</i>	1.3
9.	Raupo-Taranga, Poor Knights lily	<i>Xeronema callistemon</i> f. <i>bracteosa</i>	1.3
10.	Matagouri	<i>Discaria toumatou</i>	1.0

The New Zealand Plant Conservation Network thanks the hundreds of you motivated to vote in our annual Favourite Plant poll. That the winner of the Favourite Plant vote is a newcomer and the first of its family to take the title is fantastic!

The 2018 poll was the best supported I have had the pleasure to write about so I hope the annual vote continues to flourish. This is the last time you’ll hear from me about the poll, Alex Fergus will be

taking it on from now on and I wish him the best. Unfortunately, in the 5 years I have been involved with this poll our plants have receded in threat status, which is saddening. More species have been recognised by our excellent plant fraternity so we can only hope this great work continues; we need to know what we have to know what we may lose. Please remember to vote next year and come to our conference, it should be a cracker!

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## Taxonomy for Plant Conservation – Ruia mai i Rangiatea

### 24–28 November 2019, Wellington, New Zealand

The Australasian Systematic Botany Society and the New Zealand Plant Conservation Network are proud to announce our joint conference *Taxonomy for Plant Conservation – Ruia mai i Rangiatea* in November 2019. Attending this conference is a must do for anyone who is passionate about science and conservation of native plants in New Zealand and Australia.

This conference will be held at Wellington's premier venue, the Museum of New Zealand Te Papa Tongarewa.

- Get up to date with our stimulating and comprehensive range of speaker presentations
- Explore Wellington's forests and rugged coastlines on our field trips
- Network with people involved in a wide variety of plant conservation work
- Discuss and learn about a range of issues at our workshops
- There will be opportunities to tour the Te Papa herbarium and Otari Native Botanic Gardens

Our programme in brief:

#### **Sunday 24 November**

Workshops at various locations; welcome reception at Te Papa; after-hours access to new Taiao-Nature exhibition

#### **Monday 25 November**

First day of presentations; public lecture in the evening

#### **Tuesday 26 November**

Second day of talks; conference dinner in the evening on Te Marae at Te Papa

#### **Wednesday 27 November**

Field trips at various locations

#### **Thursday 28 November**

Final day of talks; conference closes; public lecture in the evening

A more detailed programme, calls for abstracts and registration fees will be available in early 2019.

## **About the Australasian Systematic Botany Society**

Our 2019 conference will be in partnership with the Australasian Systematic Botany Society (ASBS). With over 300 members, the ASBS is an incorporated association of people with professional and amateur interests in Australasian systematic botany. The aim of the Society is to promote the study of plant systematics in Australasia.

Plant systematics includes taxonomy and nomenclature, and is the science that unravels the relationships and evolutionary history of the flora. It provides the framework for all comparative biology and is essential for the identification and conservation of threatened species, the management of native vegetation, and the detection of naturalised species.

## **Conference Sponsorship**

Participating as a sponsor at the conference will lead you to a range of people involved in plant conservation, taxonomy and related fields and demonstrate your level of support and commitment to native plant conservation. Our 2019 ASBS-NZPCN joint conference has several sponsorship packages available, providing sponsors with a choice of exposure related to financial commitment.

The 2019 ASBS-NZPCN joint conference can provide your organisation with:

- Exposure at a premier conference devoted to leaders in plant conservation work and scientific research.
- Time to network with industry colleagues and key decision makers.
- A cost effective way to reinforce your organisation's brand to a relevant audience.
- Access to a broad network of potential partners from the public and private sectors.
- Marketing opportunities including online visibility and associated conference material.

We therefore invite you to discuss with us options available to tailor-make a sponsorship package that best suits your organisation.

## **Conference contacts and information**

- Key conference organisers: Rewi Elliot (NZPCN) and Heidi Meudt (ASBS).
- To contact the conference organisers, email: [plants2019nz@gmail.com](mailto:plants2019nz@gmail.com)
- Updates: follow us on our Facebook page: [ASBS NZPCN Wellington 2019](#)
- Conference website: [https://systematics.ourplants.org/asbs\\_2019/](https://systematics.ourplants.org/asbs_2019/)

## **Goodbye and thanks**

As those who read their newsletter will be aware, I am ending my time as NZPCN Administrator at the end of the year. I have enjoyed my time in this role which helped make the transition from full time work to full time retirement a little more gradual. Thanks to Ian Spellerberg, Mike Oates and the late John Sawyer for being generous enough to appoint a zoologist to this position in New Zealand's botanical circles. Thanks also to all those who over the years have submitted items of various kinds for publication in the newsletter. My major regret is that I was not more successful in encouraging stories from the hives of activity that the regional botanical societies obviously are. Surely more of those monthly field trips and annual camps produce information about New Zealand's plants that is worth spreading to the whole country! E noho ra.

*Eric Scott*

*NZPCN Administrator*

# EVENTS

## Waikato Botanical Society

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**Field trip:** Saturday 26 January to Monday 28 January for an Auckland Anniversary Weekend Trip to the Turangi area. **Meet:** TBA. An itinerary will come out closer to the time with meeting times. You are welcome to join us for the day or for the weekend.

**Grade:** easy-medium. **Accommodation:** TBA; we will book accommodation when numbers are confirmed; cost is likely to be \$50 pp per night. **Bring:** food, bedding, clothes, sturdy footwear, \$\$ for accommodation and a hand lens.

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**Leader:** Thomas Emmitt, [temmitt@doc.govt.nz](mailto:temmitt@doc.govt.nz); 07 878 1059 (wk) 0275405762 (mob).

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## Wellington Botanical Society

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**Field trip:** 25 January – 1 February 2019 for the annual summer camp; at Bannockburn, Central Otago, for 2019.

**Accommodation:** Bannockburn Camp near Cromwell, bunk-rooms; camping; all \$20/person/night.

**Note:** registrations have closed.

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**Leaders and Contacts:** Lara Shepherd: [Lara.Shepherd@tepapa.govt.nz](mailto:Lara.Shepherd@tepapa.govt.nz); 027 363 5854, and Mick Parsons, [parsonsroad@gmail.com](mailto:parsonsroad@gmail.com); 027 249 9663.

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## Nelson Botanical Society

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**Field Trip:** Sunday 20 January to Rainbow Ski Field, Six Mile. Meet: 8.00 a.m. at the Cathedral steps or 9.15 a.m. at Rainbow Ski Field turnoff car park near Tophouse.

Please contact Beryce by 17 January if intending to come for transport arrangements and notification in case of cancellation.

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**Leader:** Beryce Vincenzi, [beryce\\_vincenzi@xtra.co.nz](mailto:beryce_vincenzi@xtra.co.nz); ph: 03 545 1985 or 027 229 2063.

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**Field trip:** Friday 1 to Monday 4 February for the 2019 summer camp to Westport.

Please contact Jane by Friday 18 January if planning to attend.

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**Leader:** Jane Gosden, [jlgosden@gmail.com](mailto:jlgosden@gmail.com); ph: 021 498 645;

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## Canterbury Botanical Society

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**Field trip:** Saturday 12 to Saturday 19 January 2019 for the summer camp which is at Murchison. **Accommodation:** Riverside Camp Ground, Murchison. Power and tent sites available; there maybe a couple of beds left in the bunk cabins if you want to join us (\$30/night). To book a bunk, contact Paula Greer, ph: 021 233 6794 or email: [paulagreer@rocketmail.com](mailto:paulagreer@rocketmail.com) If you prefer to book your own accommodation, please let Gillian Giller know for meeting up arrangements for the day trips.

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**Contact:** Gillian Giller, [ggillerma1@actrix.gen.nz](mailto:ggillerma1@actrix.gen.nz).

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**Meeting:** Monday 4 February 2019 at 7.30 for a talk by Dr David Glenny, Manaaki Whenua, titled 'The willow flora of New Zealand: A key to what has established and what is in trial stage'.

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**Venue:** Upper Riccarton Library, 71 Main South Road.

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## University of Canterbury Summer Course: Practical Field Botany

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**Practical Field Botany (BIOL305):** intensive, short summer course on the collection, preparation, and identification of botanical specimens. Venue: University of Canterbury Cass Mountain Research Area, Canterbury. **Dates:** 17 – 25 January 2019. **Enrolment:** starts 1 October 2018.

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**More information:** Matt Walters ([matt.walters@canterbury.ac.nz](mailto:matt.walters@canterbury.ac.nz); ph: 03 369 5211) or Pieter Pelsler ([pieter.pelsler@canterbury.ac.nz](mailto:pieter.pelsler@canterbury.ac.nz); ph: 03 369 5228).

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