NEW ZEALAND PLANT CONSERVATION NETWORK

TRILEPIDEA

Newsletter of the New Zealand Plant Conservation Network

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Deadline for next issue: Tuesday 15 November 2016

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:
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Wellington 6242,
NEW ZEALAND

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Abrotanella caespitosa

President's Report to NZPCN AGM 2016

Ngā mihi ki a koutou katoa. Welcome to the 13th AGM of the New Zealand Plant Conservation Network. Thank you for coming to the AGM.

It has been another busy year for the Council. I would like to acknowledge the contributions and support of all Council members. Jesse Bythell has done a great job as Webmaster. Nicky Oliver-Smith as Treasurer, and Rewi Elliot as Secretary and managing the photographs, along with Jeremy Rolfe, all play invaluable roles. Catherine Beard has done an excellent job with awards. John Barkla has been working on the network strategy. Matt Ward, Astrid van Meeuwen-Dijkgraaf, Peter de Lange, and Sarah Richardson (co-opted member to the Committee) have been doing a great job with the Forum. Peter and Colin Ogle have updated the plant names on the website on a regular basis. Eric Scott does a fantastic job as the general administrator and answering emails! Thank you all very much for your contributions.

The Network is in a very healthy state. Membership continues to grow with 34 new members this year. Visitation to the website is huge, with over 250,000 sessions last year, one million page views and 107,000 active users. The average session lasts about four minutes, with an average of four pages viewed in each session. Most of our web visitors are from New Zealand (c. 80%). The remainder are widely spread, with the US, Australia, the United Kingdom and France each contributing 1 to 4%.

There are c. 6,118 species listed on the website: c. 3458 indigenous species (including c. 668 non-vascular taxa) and c. 2,660 exotic species. Of the indigenous vascular species, there are photographs for 2,351 species and factsheets for *c.*1,700 species have been completed; there are brief descriptions for a further c. 240 species.

The committee has reviewed and updated the Network Strategy and we have identified some of the fundamental services and functions the Network provides such as the website, and the awards, and we will continue to focus on these. A draft updated strategy will be placed on the website later this year and we look forward to your comments.

Based on priority setting from this strategy review we commissioned a review and assessment of the website to identify the best, most cost-effective ways of improving its functionality. The next step is to obtain quotes from several potential providers to implement this; we will also investigate funding options.

Two of our members, Peter Heenan and Brian Molloy, have put together a facsimile of Allan Cunningham's *Florae Insularum Novae Zelandiae Precursor*. They have been joined by Jeremy Rolfe to oversee the publication phase since he has considerable experience in book publications and they are now sorting out the publication details. They have put a proposal to NZPCN to provide the funds to publish the document with any profits going to website development. This publication will be available in early 2017; look out for the flyer/order form at the back of this newsletter.

PLANT OF THE MONTH – *ABROTANELLA CAESPITOSA*

Abrotanella caespitosa. Photo: Rowan Hindmarsh-Walls.

Plant of the month for October is *Abrotanella caespitosa,* one of 10 *Abrotanella* species found in New Zealand. Like the other mainland New Zealand species, *A. caespitosa* can be found in alpine and sub-alpine habitats. This species thrives in open, wet peaty moss and liverwort patches in seepages, hollows, snowbanks, and tarn margins, and can often be found in very shallow standing water.

It is common in the southern South Island, east of the main divide, from central and western Otago down into northern Southland and eastern Fiordland, but can also be found further north, up to the Tararua and Ruahine Ranges in the North Island. It forms very short (<1 cm) dense mats, and is easily overlooked, but can be found by looking for *Oreobolus pectinatus*, with which it is often associated.

The species is most similar in appearance to *A. patearoa*, the two being sympatric in Central Otago. Both species have distinctively dimpled leaves but *A. caespitosa* can be easily distinguished by its narrower and longer leaves and a preference for very wet peaty habitats. It seems to flower from October onwards, and heralds the start of the alpine flowering season.

The species is endemic to New Zealand and is currently listed as Not Threatened because it is common and widespread. In a few parts of its range, it is probably threatened by exotic grass invasion into its sub-alpine wetland habitat but is stable in most areas. The species is not generally cultivated but could be easily grown from rooted pieces, potted into a peaty grit mix. As this is a wetland plant, potted individuals should be watered regularly and left standing in a water filled saucer in full sunlight over the growing season.

The genus *Abrotanella*, as with many of our Asteraceous genera, is not endemic to the New Zealand region. Other species are found in Australia, Papua New Guinea and southern South America. You can view the NZPCN website factsheet for *Abrotanella caespitosa* at: http://www.nzpcn.org.nz/flora_details.aspx?ID=1431

We have continued with our regular annual activities, such as New Zealand's Favourite Native Plant, and our prestigious Annual Awards, which will be presented later tonight. We will be honouring John Sawyer and his huge contribution to the Network by dedicating the annual lecture to him. Peter de Lange will be giving the first John Sawyer Memorial Lecture tonight and I am looking forward to this immensely. In future years, this lecture will be presented at either our biennial conference or the annual general meeting.

Our major sponsor—Coastlands Plant Nursery—has continued to support the Network. Good sponsorship is key to the ongoing development and maintenance of the website. The sponsorship and fundraising position in the Network is vacant and we would like to fill it, so if there is anyone out there who is keen to take this role on, please let me know. We are also still seeking a large keystone sponsor such as a large corporate sponsor, a government department, or a District/Regional Council.

The New Zealand Indigenous Flora Seed Bank is continuing to progress well. The focus is on increasing the number of species collected through both collection expeditions led by the seed bank coordinator

and independent collecting by trained collectors. At its last meeting, 52 new species had been lodged in the seed bank. Several training workshops have been held over the last year and there is now a good depth of trained collectors in New Zealand.

The Council also continues to provide representation on the Loder Cup Committee, although the Department of Conservation decided not to present the Cup this year.

The Plant Conservation Endowment Fund this year stands at around $17,000 and the David Given Fund is about $33,000.

The Council met today to discuss initiatives for the next year, and we are all looking forward to another productive year.

To close, this will be my final Presidential Report as, after some 12 or so years on the Council and four years in the President's role, I am stepping down from the presidency (but staying on the Council for one more year) to make way for some new blood. I have really enjoyed these years on the Council and have found it extremely interesting and stimulating. Thank you all very much for your support.

Sarah Beadel, President, 2016

Gratifying and glorious to pestilent and persistent: During November 2016 vote for your favourite NZ native plant and least favourite weed

Matt Ward, NZPCN Council Member (mattdavidward@gmail.com)

Voting for the Favourite Plant and Worst weed will be underway throughout November 2016, so you will have plenty of time to make your selection. A magical button will appear on both the websites Home Page and each species fact sheet page, so you choose how you wish to vote. When you press the button you will be prompted through easy steps to cast your vote(s). Please take the time to leave a comment relating to your choice as well; these generally provide insightful passionate views about peoples loves and hates of the species present in New Zealand, they are often great entertainment to read.

In 2015, 25% of the vote for the majestic giant emperor daisy, *Pleurophyllum speciosum,* made it the clear winner of New Zealand's Favourite Plant. The "At Risk—Naturally Uncommon" mega-herb found only on Subantarctic islands grows to an impressive metre across and has stout scapes up to a metre high topped with violet composite flowers. This worthy winner generated comments like:

> *"What isn't there to admire in this magnificent megaherb? Its isolated location lends it an almost mythical presence amongst New Zealand plants. Unusually large with brilliant purple inflorescences Pleurophyllum speciosum is the personification of a botanical legend. This plant alone is worth travelling the distance south to Campbell Island; I would do anything to visit this plant again."*
>
> "*Stunning on its own, stupendous en masse.*"

2016 Winner—*Pleurophyllum speciosum*, thriving on Campbell Island. Photo: Jane Gosden.

Past winners have included: the critically endangered Bartlett's rata, *Metrosideros bartlettii*; a unique filmy fern *Hymenophyllum malingii*; pohutukawa, *Metrosideros excelsa* (twice); Cook's scurvy grass, *Lepidium oleraceum*; Chatham Island Christmas tree, *Brachyglottis huntii*; willowherb, *Epilobium microphyllus;* pingao, *Ficinia spiralis*; Chatham Island forget-me-not, *Myosotidium hortensia*; giant wire rush, *Sporadanthus ferrugineus*; and kauri, *Agathis australis*. Will any of these winners succeed again?

In 2015, the winner of the Worst Weed crown narrowly went to repeat offender wandering Jew, *Tradescantia fluminensis,* achieving 17% of the vote. This added to the title it gained in the inaugural vote of 2012. This unpopular creeping invasive, inspired comments both brief and broad, such as:

> *"This is a pernicious weed which wreaks an unprecedented level of havoc among our native ecosystems and urban gardens throughout New Zealand; by acknowledging its particularly detrimental impact on the environment I hope that people nationwide are inspired to take their best efforts to remove this species from our ecosystem."*
>
> *"Hate it!"*

Worst Weed 2015—*Tradescantia fluminensis* . Photo: Jeremy Rolfe.

The other winners from previous years include: Douglas fir, *Pseudotsuga menziesii,* and veldt grass, *Ehrharta erecta.* Both are terrible plants for our native environment and ensure a lot of time spent attempting to control or eradicate them. It's most likely these horrific species will again rate in the 2016 list.

With voting underway shortly, start thinking about your favourite plant, and worst weed. It will take less than five minutes of your time to have your say. Anyone may vote so long as they have an email address, so round up your friends, family, neighbours, colleagues and great Aunt Bessie, to get in behind your favourite New Zealand native plant and least enjoyed invasive weed. I continue to live in hope that an orchid will take the title for the first time (hint hint); you never know. One thing is sure, a new Favourite Plant and Worst Weed will be announced in December 2016.

Seeking information about flowering patterns in northern and southern rātā

Sarah Richardson, Landcare Research (Richardsons@landcareresearch.co.nz) and Rowan Buxton (BuxtonR@landcareresearch.co.nz)

We are looking for photos, records, memories or written notes that can help us reconstruct the summers when southern and northern rātā flowered heavily.

Northern and southern rātā are two of our most spectacular flowering tree species. In some years, the flowering is much more intense than others but, surprisingly, we don't know what causes these intermittent bumper years (mast years)?

A mast year or masting event is when most individuals of a species flower intensely at the same time, then hardly flower at all in other years. The intense, brilliant red of rātā flowers ensures its masting is distinctive and jaw-droppingly beautiful.

In other mast flowering trees, such as beech species, a mast year is generally preceded by a specific temperature pattern across seasons and years. It might be a particularly warm summer the year before or a big difference in temperature between the two previous

Southern rata, Otira, January 2001.
Photo: Peter Bellingham

years. Researchers in New Zealand and overseas debate whether the plants respond directly to this or whether the effect is more indirect—the temperatures might cause a spike in resources (e.g., through activating soil microbes) that enable the plants to flower. The answer is probably a mixture of several factors. Identifying how those factors work together could help us predict mast flowering for many species.

We have good data on mast seeding in beeches and podocarps, and flowering data from several species of snow tussock, largely due to the predator irruptions that follow such events. We have almost no information on northern or southern rātā but we do know that southern rātā masting is often out of phase with other masting species. Moreover, some individuals flower in 'off' years, even right through winter (Wardle 1971; Simpson 2005).

Why are we interested in rātā?

Flowering is important for two reasons:

First, rātā is a critical source of nectar for many of our forest birds. Kākā, in particular, feed on the flowers and an abundance of nectar may increase their chances of breeding successfully. In late winter and early spring, kākā also peel back the bark on southern rātā trees to feed on the sap (O'Donnell & Dilks 1989). In the months preceding flowering, there may be something in the sap that prompts kākā to breed (Wilson et al. 1998). If this is so, and we were able to predict rātā flowering, we could plan predator control operations around flowering years to protect the breeding birds.

Second, rātā makes wonderful honey. If we could predict rātā flowering from climate data, beekeepers could plan ahead and take advantage of a mast year.

This year we will start measuring southern rātā flowering in Westland and Canterbury, but it may take many years of data to detect a pattern. However, old tramping photographs and historical accounts could help us piece together a flowering chronology in less time. We need lots of photographs and records of flowering. And we need your help.

We ask NZPCN readers to share their records with us. We need photographs, notebook records and observations.

Photographs

We're interested in all photos of southern or northern rātā forest from anywhere in New Zealand so long as you can provide a date and a location. Dates and places can be a bit rough, e.g., Summer 1987, somewhere near Nelson.

We need images where rātā *isn't* flowering as much as images of it flowering because the 'off' years are a vital part of our analysis. Although mast flowering usually happens over summer, we are interested in photos from throughout the year because this will allow us to firmly pinpoint the flowering window. The most useful photographs are those where we can see lots of trees – close ups of single flowers or trees are still helpful as corroborating evidence, but we are most interested in where there are lots of trees in flower all at the same time.

Sometimes people take a photo of a single tree because it was the only one flowering, and this sort of information is often recollected when looking at your photos. Notes like these from memory can also be useful.

The examples below illustrate what we're looking for and what we can say with each type of image.

Definitely mast flowering
We can see lots of southern rātā trees and we can confidently say that many of them are flowering heavily. Perfect.
Photo: Southern rātā, Otira Valley, Feb 2010. Rowan Buxton.

Definitely not mast flowering
We can see lots of trees and we can confidently say that none of them are flowering intensely. Perfect.
Photo: Northern rātā, Kohaihai, Dec 2007. Janet Wilmshurst.

A few trees are definitely flowering intensely
We can see quite a few trees, and we can see that a few are flowering intensely.
A few more images from that year would be ideal to confirm that flowering was widespread rather than localised to these few trees.
Photo: Southern rātā, Otira, summer 1990/1991. Rowan Buxton.

At least one tree is flowering intensely
We can see part of a tree is flowering heavily. We can't see if other trees are also flowering.
More images would be needed to confirm that flowering was widespread rather than localised to this tree.
Photo: Southern rātā, Franz Josef, Jan 2015. Rowan Buxton.

Notes and observations

Another source of information is written notes or records. Do you have any records of northern or southern rātā flowering that you would be willing to share with us? These might be botanical outings, trip reports for tramping clubs, or any number of others that can be pinpointed to a year and a place. We've found many examples in Botanical Society newsletters but there will be many other, unpublished records that we would love to hear about.

How can you help?

You can email us (Sarah Richardson, RichardsonS@LandcareResearch.co.nz or Rowan Buxton, BuxtonR@LandcareResearch.co.nz), or phone us (03 321 9788 for Sarah and 03 321 9627 for Rowan) or send us material in the post (Landcare Research, PO Box 69040, Lincoln 7640). We'll scan and return all originals if you ask us to and you provide a return address.

NatureWatch NZ online

Alternatively, you could upload your observations to Nature Watch: http://naturewatch.org.nz/. Nature Watch is a web-based platform for sharing biodiversity observations. It's very flexible so you can upload an observation with or without photographs, add a location and date and annotate your observation with notes. Observations can be viewed by anybody. They contribute to large scale plant distribution databases such as GBIF (http://www.gbif.org/) and they are permanently stored, so they make an enduring contribution to our understanding of New Zealand's flora. To give you some idea, here's an example of a southern rātā photo that we loaded recently: http://naturewatch.org.nz/observations/3615952

What are we going to do with the information?

We will score flowering for each photo or observation and store these in a data file. When we've finished our analysis, we will upload this file to a data archive called Datastore so that others can use it in the future. We will acknowledge all contributions.

Do you have ideas about what causes masting in rātā?

Peter Wardle suggested that southern rātā flowers heavily the year after a dry summer, particularly when there's an absence of drought or unseasonal cold in the early part of the summer in the flowering year. We can test this suggestion but we'd be keen to hear of other patterns that you've observed that we could test. For example, we are emerging from a very mild winter (no complaints) and already people are suggesting that warm winters will promote widespread flowering by rātā. If you have observed a pattern between weather and rātā flowering, we will test it alongside the two ideas described above.

Data analysis

We will analyse the data to try and determine whether there's a climate signal that precedes flowering. If we are successful, we will try to publish a scientific article on the work and, of course, we'll be back here with the results.

Thank you for your help.

References

O'Donnell CFJ, Dilks PJ. 1989: Sap-feeding by the kaka *Nestor meridionalis* in South Westland, New Zealand. Notornis 36: 65–71.

Simpson P. 2005. Pohutukawa and Rātā: New Zealand's Iron-hearted Trees. Te Papa Press.

Wardle P. 1971. Biological flora of New Zealand 6. *Metrosideros umbellata* Cav. [Syn. M. lucida (Forst.f.) A. Rich.] (Myrtaceae) Southern rātā. New Zealand Journal of Botany 9: 645–671.

Wilson PR, Karl BJ, Toft RJ, Beggs JR, Taylor RH. 1998: The role of introduced predators and competitors in the decline of kaka (*Nestor meridionalis*) populations in New Zealand. Biological Conservation 83: 175–185.

Lucy Cranwell 2017 student grant for botanical research: call for applications

Applications are invited for the Lucy Cranwell Grant of $2,500 from the Auckland Botanical Society to assist a student studying for the degree of PhD, MSc, BSc (Hons) or BApplSci at any tertiary institution in New Zealand whose thesis project deals with some aspect of New Zealand's flora and vegetation. Priority will be given to projects relevant to the northern half of the North Island.

The research project to be supported will be chosen on the basis of appropriateness to the objects of the Society, namely to encourage the study of botany, and to stimulate public interest in the plant life of New Zealand and its preservation, conservation and cultivation. The grant will be administered by the student's supervisor as a contribution to expenses associated with the project.

Closing date for applications: **5.00 p.m. Friday 9 December 2016**.

A copy of the Application Form and the Rules of the Award may be downloaded from the Auckland Botanical Society website: https://sites.google.com/site/aucklandbotanicalsociety/

Contact for enquiries: Vijay Soma, Secretary, Auckland Botanical Society, PO Box 26391, Epsom, Auckland 1344.

New Zealand Indigenous Flora Seed Bank (NZIFSB): A French connection at the seed bank

Jessica Schnell (J.L.Schnell@massey.ac.nz) and
Craig McGill (C.R.McGill@massey.ac.nz)

The seedbank has been very fortunate to have had two interns from France, Héloïse Colmet-Catraud from Montpellier Supagro and Anaïs Lossignol from the engineering school in Agrocampus Ouest, Rennes, working in the seed bank for the past few months. Héloïse will be in New Zealand until late 2016 and Anaïs until early 2017. Both have made a huge contribution to the seed bank having, amongst many other things, helped the seed bank keep up with the cleaning and assessment of collections while Jess was working at the Millennium Seed Bank in West Sussex.

Anaïs Lossignol scoring a tetrazolium test.

Héloïse Colmet-Catraud scoring a tetrazolium test.

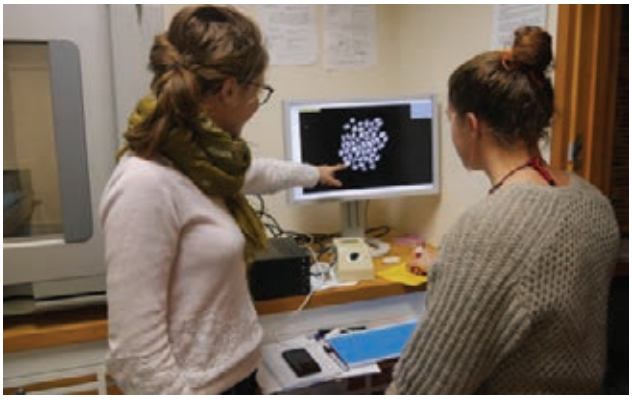
Héloïse and Anaïs have been actively cleaning, x-raying, setting up germinations, tetrazolium testing and banking many types of native New Zealand seeds (as well as learning New Zealand English), including *Ileostylus micranthus*. Cleaning *I. micranthus* seed is a challenge because of the glue-like viscin found on the seeds that causes them to coalesce into a large sticky ball when they are not adhering to hands and cleaning equipment.

Anaïs and Héloïse cleaning *Luzula rufa* var. *rufa* (red wood rush) and *Coprosma dumosa* seeds.

The aim is for both Héloïse and Anaïs to see the other end of the seed banking by joining at least one seed collecting expedition before they return home to France, but this will depend when seeds are ripe for collection.

We would like to extend our thanks to Anaïs and Héloïse for their work in the seed bank. Their patience, diligence and willingness to learn has been very much appreciated. We would not be as far through the seedbank processing as we are now without their input. The timing of their arrival at the NZIFSB was perfect!

Anaïs preparing *Carmichaelia petriei* (desert broom) seeds for x-raying.



Anaïs and Héloïse discussing the x-ray results for seeds of *Carmichaelia petriei*.

Global Partnership for Plant Conservation (GPPC)

Suzanne Sharrock, Director of Global Programmes, GPPC (suzanne.sharrock@bgci.org)

I am pleased to inform you that the report of the GPPC workshop meeting on 'Plant Conservation and the Sustainable Development Goals', which was held at Missouri Botanical Garden on June 30th, is now available to download from the Plants2020.net website: http://www.plants2020.net/news/1368/

What is *Corybas trilobus*?

Jeremy Rolfe, Technical Adviser Flora, Department of Conservation, Wellington (jrolfe@doc.govt.nz)

When Joseph Hooker (1853) described *Corybas trilobus* (as *Nematoceras triloba*) (Fig. 1), little was known about the extent of variation amongst this group of orchids. Since then considerable diversity has been revealed in New Zealand *Corybas* but it is only since the advent of DNA analysis that significant progress has been made in unravelling the relationships amongst these cryptic plants.

Figure 1. *Corybas trilobus*. Photo: Bill Campbell.

Most New Zealand species of *Corybas*, fall into one of two clades, referred to as the 'rivularis' clade and the 'trilobus' clade. Each clade includes plants that exhibit a wide range of variation and, as the diversity of forms has been revealed since Hooker's original description, additional species have been described, e.g., *C. iridescens* Irwin & Molloy (1996), *C. papa* Molloy & Irwin (1996) in the rivularis clade. The *Corybas trilobus* clade is particularly variable and several 'tag names' have been used to represent possible new taxa that are presently included under this name (e.g., St George et al. 1996; Scanlen & St George 2009; NZ Native Orchid Group 2015).

Three tag-named entities in the *Corybas trilobus* aggregate—"Trotters Gorge" (aka "Trotters"), "Rimutaka" and "pygmy"—were listed in the 2012 NZ Threat Classification System assessment (de Lange et al. 2013). As well as those entities, the NZ Native Orchid Group lists "craigielea", "darkie", "round leaf", "trisept" and "triwhite", with the note '…and many others' (www.nativeorchids.co.nz, accessed 5 Oct 2016). The 'many others' include names such as "eastern hills", "tridodd", and "tribrive".

Carlos Lehnebach recently published formal names and descriptions for five of these entities (Lehnebach et al. 2016): *Corybas confusus* ("round leaf"), *C. obscurus* ("darkie"), *C. sanctigeorgianus* ("trisept"), *C. vitreus* ("eastern hills"), an *C. walliae* ("triwhite").

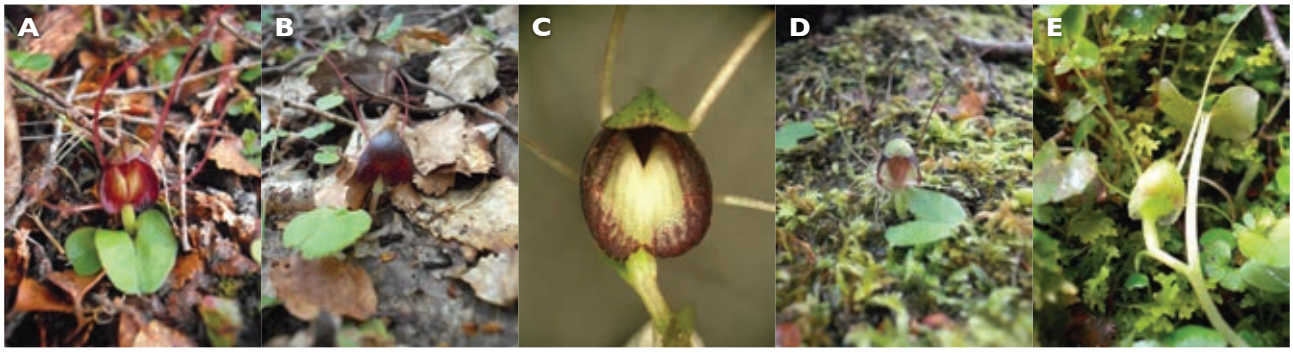


Figure 2. *Corybas* species recently described by Carlos Lehnebach. (A) *C. confusus*, (B) *C. obscurus*, (C) *C. sanctigeorgianus*, (D) *C. vitreus*, (E) *C. walliae*. Photos: Carlos Lehnebach.

The descriptions of the five new species clearly separate them from the type specimen *Corybas trilobus* but the enigma remains as to how to distinguish *C. trilobus* from the undescribed variation that remains in the group. While the research into the group continues, it is timely to look at characters that are useful to separate different forms from each other and how to recognise *C. trilobus* s.s.

Useful taxonomic characters in *Corybas trilobus* agg.

Corybas is a notoriously difficult group to identify, and the identity of a specimen can engender a lot of debate. Several factors contribute to the uncertainty; prominent among these is that some *Corybas* species are very plastic, that is they can vary considerably according to environmental

conditions. Furthermore, there is usually no single character that separates one species from another; rather, it is a combination of characters that separates one species from another. The difficulty of knowing what to call a specimen is compounded when trying to apply these combinations of characters to tag-named entities whose limits have not been formally defined.

The differences amongst entities in the *Corybas trilobus* aggregate are most evident in the flower. Leaf characters are not very helpful in identification: the leaf shape differs between fertile and non-fertile individuals in a population and can vary on an individual plant from year to year. Therefore, leaf characters are not considered further in this article. The following flower characters are useful aids to identification (Fig. 3):

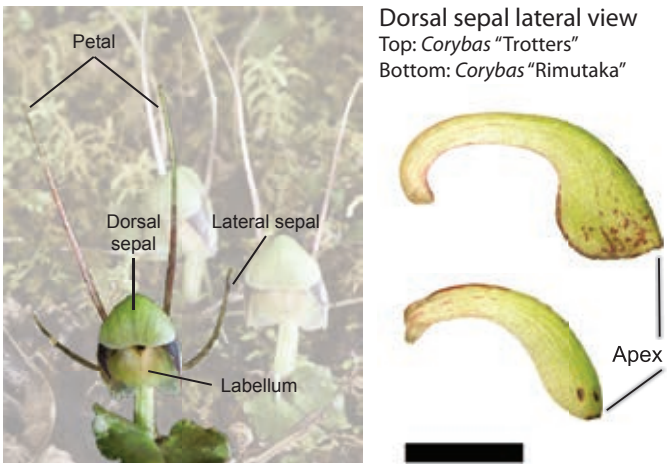


Figure 3. Parts of a flower in the genus *Corybas*. Scale bar = 5 mm. Note: Most publications (e.g., St George et al. 1996; de Lange et al. 2007) label petals and lateral sepals the opposite to what is shown here. However, close scrutiny of *Corybas trilobus* agg. flowers shows that the shorter, lower appendages are in the outer whorl, hence they are the sepals, as originally described by Hooker (1853) and depicted by Irwin in Fig. 24 in Moore & Edgar (1970).

Character	Character states[1]
Dorsal sepal length	Projecting beyond the labellum and recurved over it; appressed to top of labellum
Dorsal sepal shape of distal half (viewed from above)	Elliptic; spathulate
Dorsal sepal apex	Strongly notched; emarginate/retuse; obtuse
Dorsal sepal colour	Green; purple/maroon; green flecked with maroon
Lateral sepal length	<25 mm; 25–50 mm; >50 mm
Petal length	<15 mm; >15 mm
Labellum overall colour	Uniformly dark; uniformly pale; dark outer, pale central areas
Labellum central area colour	Translucent; purple/maroon; pale green/white
Labellum hairs on inner surface	Absent or very few; mostly on central and lower parts; extending to upper parts below the dorsal sepal
Labellum lower margin	Entire; erose; lacerate
Labellum base	Lobed; truncate; acuminate; apiculate

1. Only character states that are relevant to the *Corybas trilobus* aggregate are listed here.

How *Corybas trilobus sensu stricto* differs from its near relatives

Although Carlos did not recircumscribe *C. trilobus* when he described five new species (Lehnebach et al. 2016), his diagnoses did distinguish the new species from *C. trilobus* and other similar species. (To have recircumscribed *C. trilobus* in that paper would have been premature while investigation into the group continues, and the circumscription would have to keep changing as new species are progressively described.) However, from the diagnoses in Lehnebach et al. (2016), we can infer useful information about the characteristics of *C. trilobus*:

- Labellum not dark maroon (cf. *C. confusus*).
- Flower with significant pale, translucent areas, not dark maroon to black (cf. *C. obscurus*).
- Dorsal sepal not projecting beyond labellum (cf. *C. sanctigeorgianus*).
- Labellum central portion not white (cf. *C. sanctigeorgianus*).
- Flower frontal view not broadly ovate (cf. *C. vitreus*).
- Dorsal sepal not emarginate to retuse (cf. *C. vitreus*).
- Flower not pale green to yellow (cf. *C. walliae*).

Corybas trilobus sensu stricto looks most similar to the newly described *C. vitreus* (Fig. 4) although genetic evidence shows them to be quite distinct from each other (Lehnebach et al. 2016). The lower margin of the labellum of *C. trilobus* is more coarsely lacerate than the erose margin of *C. vitreus*, and the labellum is more or less two-lobed at the lower margin whereas the labellum of *C. vitreus* is almost truncate.

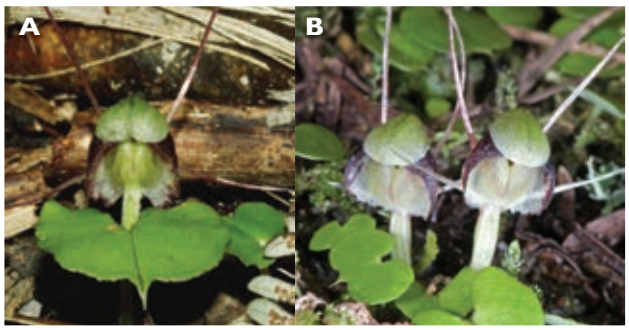


Figure 4. (A) *Corybas trilobus*, (B) *Corybas vitreus*. Photos: (A) Bill Campbell, (B) Jeremy Rolfe.

A note about *Corybas* "Trotters" and continuing research

Corybas "Trotters" (Fig. 5) is a particular focus of current research. The name "Trotters" was first coined for plants found in the Trotters Gorge in Otago but morphometric and phylogenetic data are lacking from the South Island. Data have been gathered from North Island.


Figure 5. *Corybas* "Trotters". Photo: Matt Ward.

Corybas "Trotters" is allied to *C.* "Rimutaka" (Fig. 6) which occurs in the North Island and northern South Island. In the lower North Island, *C.* "Trotters" seems to be more eastern than *C.* "Rimutaka" but their ranges may overlap.

The dorsal sepal of *Corybas* "Trotters" broadens abruptly towards the apex (Fig. 3), and it has short hairs mostly on upper parts of the inner surface of the labellum. In *C.* "Rimutaka", the dorsal sepal is narrowly elliptic when viewed from above, and hairs are mostly confined to the lower parts of the inner surface of the labellum.


Figure 6. *Corybas "Rimutaka"*. Photo: Jeremy Rolfe.

People who encounter *Corybas trilobus* or its allies will possibly find forms that do not neatly match current species or the 'tag-named' forms mentioned above. If you encounter *C.* "Trotters" or an unusual form of the *C. trilobus* aggregate, please contact Carlos Lehnebach (carlosl@tepapa.govt.nz) or Jeremy Rolfe (jrolfe@doc.govt.nz), preferably with photos that show its distinctive features.

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Does Rapid ʻOhiʻa Death pose a risk to New Zealand *Metrosideros*?

Astrid van Meeuwen-Dijkgraaf (astrid@wildlands.co.nz)

Peter de Lange gave a great inaugural John Sawyer Memorial talk at the NZPCN annual meeting on pioneering plant conservationists and areas where we could still improve plant conservation. One of the items that peaked my interest was his description about what is happening to ʻōhiʻa, the Hawai'ian pohutukawa (*Metrosideros polymorpha*). I'd not heard about this before, so did some sleuthing and came across an entire website dedicated to this problem—http://cms.ctahr.hawaii.edu/rod/Home.aspx. The following description comes from this site.

> *"On Hawai'i Island, hundreds of thousands of ʻōhiʻa have already died across thousands of acres from this fungus, called Ceratocystis fimbriata. Healthy trees appear to die within a few days to a few weeks, which is how the disease came to be called "Rapid ʻŌhiʻa Death." This disease has killed trees in the South Hilo, Puna, Kaʻū and Kona districts of Hawai'i Island and has the potential to kill ʻōhiʻa trees statewide.*

(Note by AvMD: *Ceratocystis fimbriata* is already in New Zealand—it's a mutated strain of it that is causing the disease in Hawai'i.)

> ***Transmission of the fungus in Hawai'i***
>
> *The* Ceratocystis *fungus grows in the sapwood of an infected ʻōhiʻa tree. Humans are thought to be a main vector because we move infected wood, or contaminated tools, gear and vehicles from one location to another. Other potential vectors include feral ungulates and beetles.*
>
> *Recent research has identified a particular species of non-native ambrosia beetle that is especially attracted to infected dead and dying ʻōhiʻa trees. The beetles bore into the trees and create a fine, talc-like dust. Boring dust from an infected ʻōhiʻa tree is mixed with* Ceratocystis *fungal spores and can potentially be carried by the wind. The strain of* Ceratocystis *affecting ʻōhiʻa has been found in soils under ROD infected stands in Hawai'i. We suspect that the fine dust created by boring beetles is contaminating soil, and that contaminated soil can transmit the disease.*
>
> *The primary path for Ceratocystis to enter ʻōhiʻa plants is through a wound. A wound can occur in many ways and does not necessarily have to be large. Wounding can occur by: cutting, pruning, sawing, breakage, strong winds, root abrasion, weed-whacking, lawn mowing, rubbing by ungulates, root trampling."*

Risk to New Zealand

Pohutukawa and rata are some of our key forest species. Imagine our forests without these key species (look at the MPI brochure for a Hawai'ian example). The Ministry for Primary Industries in New Zealand released a statement on 17 November 2015 that it "has recently become aware that a fungal disease of plants, *Ceratocystis fimbriata*, poses a threat to environmentally and economically important plants in New Zealand, including pohutukawa, rata and kiwifruit. Based on this information, MPI has changed the import conditions for plant species that are known hosts of the pathogen. The measures come into effect on 10th December 2015 and restrict the importation of nursery stock (cuttings [dormant and/or non-dormant], whole plants, dormant bulbs and tubers) of 39 genera of plants that are known hosts of *Ceratocystis fimbriata* or *Ceratocystis platani* and are eligible for import into New Zealand".

The genera are *Acacia*, *Actinidia*, *Alocasia*, *Ananas*, *Annona*, *Betula*, *Carya*, *Cassia*, *Celtis*, *Citrus*, *Colocasia*, *Corymbia*, *Eriobotrya*, *Erythrina*, *Eucalyptus*, *Fagus*, *Ficus carica*, *Inga*, *Juglans*, *Mangifera*, *Metrosideros*, *Metroxylon*, *Ostrya*, *Passiflora*, *Pimenta*, *Populus*, *Protea*, *Prunus*, *Punica*, *Quercus*, *Schizolobium*, *Schotia*, *Spathodea*, *Styrax*, *Syngonium*, *Tilia*, *Ulmus*, *Xanthosoma*.

The following countries are considered by MPI as being countries where *C. fimbriata* is known to be present: Australia, Brazil, Canada, China, Colombia, Congo, Costa Rica, Cote d'Ivoire, Cuba, Ecuador,

Fiji, Guatemala, India, Indonesia, Jamaica, Japan, Kenya, Malawi, Malaysia, Mexico, Myanmar, Oman, Papua New Guinea, Pakistan, Poland, South Africa, Suriname, Taiwan, Tanzania, Thailand, Uganda, United States, Uruguay, Venezuela, Vietnam, Western Samoa, Zambia. (Sources: mpi.govt.nz/document-vault/10601 and mpi.govt.nz/document-vault/12067).

The concern for New Zealand is that, like didymo, this fungus will be brought in to the country on clothes, footwear, equipment, or in soil associated with agricultural imports other than nursery stock. However, these avenues are currently thought by MPI not to be significant.

One of the attendees at the AGM told us that she had to convince NZ Border Control to sterilize the shoes used to walk through forest on Hawai'i. The border patrol officers were very amenable to do so once she explained about "Rapid ʻŌhiʻa Death", but were not previously aware of this risk. I've just come back from Vietnam where we spent time in high country forests. However, I wasn't aware of this potential risk to New Zealand and didn't sterilize my footwear before to returning to New Zealand.

Perhaps that is a lesson for all plant lovers out there—if at all possible, sterilize footwear before coming back to New Zealand and check clothing and equipment for seeds and foreign material. Perhaps we also need to encourage MPI and airports to install footwear sterilisation mats in all overseas arrival terminals—slightly damp but fungus/virus killing carpets in the terminal just after you exit the plane. Plus we need better checking and sterilization of footwear in luggage. I'd hate to see this fungus arrive in New Zealand.

UPCOMING EVENTS

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

Auckland Botanical Society

Meeting: Wednesday 2 November at 7.30 p.m. for a talk by Catherine Beard titled "Managed honey bees in New Zealand native ecosystems – what's the buzz?" **Venue:** Unitec Room 115-2017.	**Contact:** Maureen Young (e-mail: youngmaureen@xtra.co.nz).
Field trip: Saturday 19 November to Mt Tamahunga. **Leaders:** Dave Wilson and Maureen Young.	**Contact:** Maureen Young (e-mail: youngmaureen@xtra.co.nz).

Rotorua Botanical Society

Field trip: Sunday 9 October to Maungaongaonga Scenic Reserve, near Waiotapu. **Meet:** the car park, Rotorua, at 8.30 a.m. or 9.00 a.m. at Benny Bee Tearooms, Waiotapu 27 km south of Rotorua. **Grade:** medium-hard.	**Leader:** Martin Pearce, ph: 07 349 1929; email: mpearce21@xtra.co.nz.
Field trip: Saturday 15 October to Okareka Mistletoe Restoration Project Weed Control/Plant Releasing Work Day. **Meet:** corner Summit and Loop Rds, Okareka (lake end) at 8:45 a.m. **Grade:** medium-hard; activities suitable for all ages and abilities will be provided.	**Leader:** Paul Cashmore, ph: 07 349 7432 (wk) or 027 650 7264, email: pcashmore@doc.govt.nz

Field trip: Friday 28 – Saturday 29 October (Sunday 30 October optional); East Cape revisited #10. **Meet:** for those coming on Friday meet at Tim's bach on Friday night; for those coming on Saturday morning, meet at DOC Opotiki (Information Centre, Bridge Street) (check with Tim for time). **Cost:** $10 donation for accommodation for those staying Saturday night. **Bring:** 4WD if you have one.	**Leader:** Tim Senior, ph: 0800 884 881 ext 6010 or 07 315 7371 (hm); email: tim.senior@boprc.govt.nz.
Field trip: Saturday 19 November to Matakana Island Wetlands. Meet: the car park, Rotorua, at 7.30 a.m. or Omokoroa at the ferry ramp at 8.50 a.m. (ferry leaves at 9.00 a.m.). **Grade:** easy-medium.	**Leader:** Sarah Beadel, ph: 07 345 5912 or 021 924 476; email: Sarah.Beadel@wildlands.co.nz.

Whanganui Museum Botanical Group

Workshop: Tuesday 1 November at 7.30 p.m. for a workshop on Plantaginaceae led by Colin Ogle (and everyone else).	**Venues:** Museum's Davis Lecture Theatre and the classroom.

Wellington Botanical Society

Field trip: Saturday 5 November to Rimutaka Forest Park. Meet: at 10.00 a.m. at the car park at the start of the Orongorongo Track.	**Leaders:** Ian & Jill Goodwin; please ph: 04 475 7248, or 021 519 461, with your email address so they can send you a plant list and phone them if you would like a lift.
Meeting: Monday 21 November at 7.30 p.m. for a talk by Dr Peter Simpson titled 'The natural history of Abel Tasman National Park: Project Janszoon'.	**Venue:** Victoria University Lecture Theatre M101, ground floor Murphy Building, west side of Kelburn Parade; enter building off Kelburn Parade about 20 m below pedestrian overbridge
Field trip: Saturday 3 – Sunday 4 December to Palliser Bay, South Wairarapa. **Meet:** 9.30 a.m. at Dorset Square, Featherston, corner of Moore St and SH2. Accommodation: at Sunita's bach, Ocean Beach, near Corner Creek, 2 tent sites, 4 bunks, plus DOC campsite 300 m away (alternatives: Featherston Motels & Camping, 4 Fitzherbert St, Featherston ph: 06 308 9852; Race Track Ranch, SH2, Tauherenikau, ph: 06 308 9026 / 021 271 0364.	**Co-leaders:** Pat Enright and Chris Hopkins, ph 04 528 5195, email hopkinschris@xtra.co.nz so he can e-mail you a species list; Sunita Singh 03 387 9955, 027 405 2987, email: sunita@actrix.co.nz.

Nelson Botanical Society

Field trip: Sunday 20 November to Kill Devil Track to look for *Calochilus paludosus* (bearded orchid). Meet: at the Church steps 8.00 a.m.	**Leader:** Susan Cook, ph: 03 544 6175 or 022 544 6175; please register with her by Friday 18 November.
Field trip: Friday 9 to Sunday 11 December for the camp at Mangarakau.	**Registrations:** to Susan Cook, ph: 03 544 6175 (registrations close 2 December).

Canterbury Botanical Society

Meeting: Monday 7 November at 7.30 p.m. for a talk by John Preece titled 'Canterbury Wetlands'. **Venue:** Upper Riccarton Library community meeting room, 71 Main South Road.	**Contact:** Alice Shanks, ph: 03 337 1256, email: alice@caverock.net.nz.
Field trip: Spring Camp Friday 18 to Sunday 20 November at High Peak station.	**Contact:** Alice Shanks, ph: 03 337 1256, email: alice@caverock.net.nz.

University of Canterbury summer course: Practical Field Botany

Practical Field Botany (BIOL305): an intensive, short summer course designed to meet the need for training in the collection, preparation, and identification of botanical specimens. **Venue:** University of Canterbury Cass Mountain Research Area, Canterbury. **Dates:** 19 – 27 January 2017 This course will be of interest to amateur botanists, members of the workforce (e.g., Crown Research Institutes, Department of Conservation, local and regional councils, botanic gardens, horticulturists and teachers) and biology students who need to acquire or upgrade taxonomic skills and are interested in field ecology, conservation, biodiversity and biosystematics. The course is targeted at participants with various entry levels: from students with a limited plant knowledge to experienced career professionals. Enrolment: starts 4 October 2017. F	**Information:** Dr Pieter Pelser, email: pieter.pelser@canterbury.ac.nz; ph: 03 364 2987, ext 45605.

Otago Botanical Society

Field trip: Saturday 5 November to Fiddlers Flat, Manuherikia River. **Meet:** Botany Department car park at 8.00 a.m. and return 6.00 p.m.	**Contact:** John Barkla ph: 03 476 3686 or email: jbarkla@doc.govt.nz.
Meeting: Wednesday 9 November at 5.20 p.m. for a talk by Jaz Morris, Teaching Fellow and PhD candidate, Botany Department, University of Otago, titled 'Alpine Flora of the Cordillera Blanca, Peru'.	**Venue:** 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 get in and go to the Benham Seminar Room, Rm. 215, 2nd floor.

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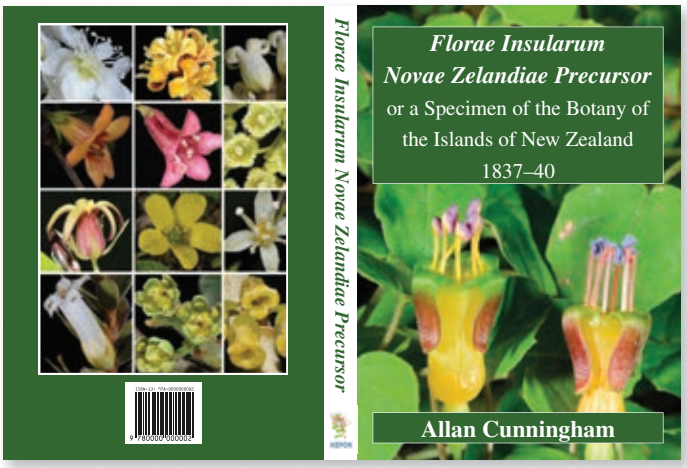

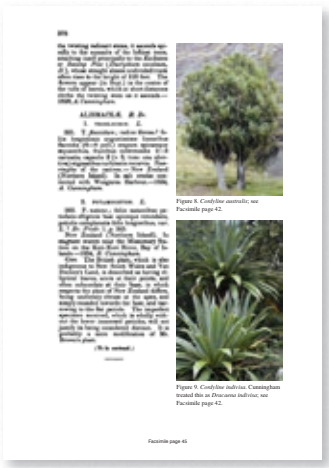

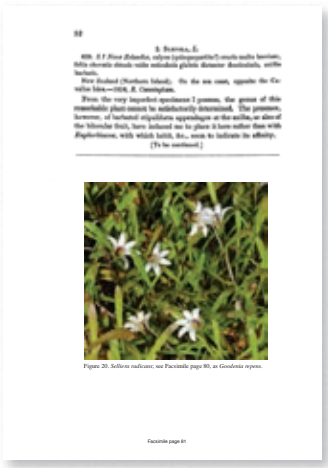

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