



TRILEPIDEA

NEWSLETTER OF THE NEW ZEALAND PLANT CONSERVATION NETWORK

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

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Guest Message from a Council Member

Kia ora koutou

The NZPCN Council met in Wellington on 22 February. During the meeting we were all saddened to hear of the earthquake in Christchurch and our thoughts were immediately with those of you who have been affected by this.

During the meeting, we discussed the next AGM, which is currently planned for November in Wellington. At the AGM, we will also be announcing the next recipient of the David Given scholarship. Applications for the scholarship will be opening in August for those of you who may be looking for funding.

In the past couple of months, I was fortunate to visit some spectacular areas of Fiordland and Otago. What fantastic places; Gertrude Saddle near the Homer Tunnel was one of the walks at the top of my list. Flowers were in out in abundance. *Aciphylla congesta*, *Dolichoglottis scorzonerooides* and *D. lyallii*, *Ranunculus lyallii*, *Ourisia* spp. and *Bulbinella* spp. made parts of the walk feel like we were in a botanic garden.

Having never been in the area before, everything was a delight and a real privilege. Although I have the pleasure of seeing a wide variety of plants every day, there's nothing like seeing them growing out in the wild. Henry Thoreau had the right implication when he wrote: 'What would become of us if we only walked in a garden?'. Wild biodiversity must be treasured.

A chance to say something about treasuring our biodiversity is available at present as the Government seeks public input on a proposed National Policy Statement on Indigenous Biodiversity. This will set expectations for managing New Zealand's indigenous biodiversity under the Resource Management Act. You can find out more at the Ministry for the Environment's website (www.mfe.govt.nz). Submissions close on 2 May 2011.

MAF Biosecurity New Zealand is also interested in what you have to say. MAF is starting a review of the National Pest Plant Accord list. The focus of this review is to consider applications to add or remove species. More information is included later in the newsletter.

I've just had a crack at the new online plant quiz. If you haven't had a go yet, hop to it. There are easy, moderate and hard options making it a fun way to test your knowledge and perhaps pick up on something new. There is a mix of native and exotic questions, or you can exclude one to focus on the other. And no, you can't press the back button to get 100 percent.

Kia kaha, Christchurch.

Rewi Elliot

Wellington City Council

PLANT OF THE MONTH – *PITTOSPORUM DALLII*



Pittosporum dallii. Photo: Simon Walls.

Plant of the month for March is *Pittosporum dallii*. This is a distinctive small tree that can grow up to 6 m tall with a trunk reaching 200 mm diameter. It is endemic to the South Island where it is found in silver beech forest and subalpine scrub in Kahurangi National Park in the North West Nelson area.

The leaves are dark green above, paler beneath, thick and coriaceous with distinctly serrated margins. Older bark is a grey colour, with the younger stems a dark purple-black or reddish-purple. Profuse white to pale yellow inflorescences appear in early summer.

It makes a great garden specimen and is easily propagated from fresh seed. It is rather slow growing and does best in a cooler position.

Pittosporum dallii is classified as Nationally Vulnerable and is threatened by deer and possums. In the wild, it is usually found in more inaccessible cliff faces where it is less prone to browsing animals. The Network fact sheet for *P. dallii* can be found at: www.nzpcn.org.nz/flora_details.asp?ID=116

Brian Molloy elected a Companion of the Royal Society

The Council of the Royal Society of New Zealand has elected a strong advocate of native plant conservation, botanist Dr Brian Molloy ONZM, as a Companion. The President of the Royal Society of New Zealand, Dr Garth Carnaby, said the election of Brian Molloy was formal acknowledgement of the outstanding service he had given to botany and ecology in New Zealand and his willingness to share his knowledge. “Brian is held in high esteem both in New Zealand and internationally for his contributions to understanding our native plants and their conservation. He has shared his knowledge and expertise with many people, actively engaging in a number of botanical societies over a very long period of time. Brian has a particularly high reputation in the farming community for his work with landowners to better manage vegetation of national significance. His career exemplifies true public service.”

Dr Molloy was recipient of the Network’s Lifetime Achievement Award in 2006. He has served on the Riccarton Bush Trust for the past 36 years. He was a director of the Queen Elizabeth II National Trust from 1989 to 1998 and is currently a South Island field representative of the Trust. Dr Molloy began his career as a research scientist in agriculture later specialising in the conservation and ecology of native plants. Although retired, he continues to work as a botanical and conservation consultant and as a research associate with Landcare Research. In recognition of his stature, he has had two native plants named after him, the Cook Strait kowhai (*Sophora molloyi*) in 2001 and the leafless orchid (*Molloybas cryptanthus*) in 2002.

The Network adds its congratulations to the many others that Dr Molloy has had.

Finally—the Chatham Islands have an endemic liverwort!

Peter de Lange, Department of Conservation (pdelange@doc.govt.nz)

In 2005 whilst at the Allan Herbarium (CHR), Lincoln I happened to ask Dr David Glennly if anyone had examined the liverwort flora of the Chatham Islands. David told me that a few people had collected liverworts from there, including him in 1997, and so far found “nothing special”. Intrigued, I then asked if David would like me to collect hornworts and liverworts while doing vascular plant work over there and he agreed that this would be a good idea. David also kindly gave me a checklist of the hornworts and liverworts known to be on the island and, further, he agreed to identify what I got from there.

David’s initial listing for the islands suggested that despite the group’s large size (c. 100,000 ha) it had very little to offer, with only 92 taxa recorded. None of these was endemic—which struck me as odd, considering the presence of 37 or so named vascular plant endemics (including two endemic genera), one endemic moss (*Macromitrium ramsayae*) and one lichen (*Caloplaca maculata*). This being the case, surely there had to be an endemic liverwort out there as well. David admitted that this was quite likely but, when considering the apparently depauperate liverwort flora, he surmised that perhaps the island group’s extreme modification may already have eliminated most of the diversity and, if so, any likely endemics, and that this, coupled with the group’s isolation from New Zealand, probably accounted for the low species diversity. These are good points but, nevertheless, I noted that David’s field work there had been limited to Rekohu (Chatham Island), the largest of the islands in the group and, because he used bicycles to get around and did not know many of the landowners (most of the land on the islands is privately owned), his visits were necessarily limited to the few reserves he could easily and legally explore. So, up for a challenge, I devoted what time I could during five 10-day long visits to the islands between January 2006 and November 2008 to collecting hornworts, liverworts and, for Drs Allan Fife and Jessica Beever, mosses.

As of 2011, we now know that there are nearly 300 hornwort and liverwort taxa on the islands (already quite a jump from the 262 reported by Glennly & de Lange 2008). However, obtaining exact numbers is not that easy, since many of the genera and families I collected are still being studied, mostly by Drs John Engel (Lophocoleaceae, Plagiochilaceae) and Matt von Konrat (Frullaniaceae) at the Field Museum, Chicago and Dr Matt Renner (Lejeuneaceae) at NSW Herbarium, Sydney. At some stage, the finds will be made known in a paper we are slowly writing about the Chatham Islands Hepaticae.

As such, it was very pleasing that, in May 2009, John Engel wrote to me to enquire about a *Plagiochila* I had collected with Peter Heenan from the southern shores of Lake Rakeinui, on Rekohu. Rakeinui is the largest of the peat lakes on the southern tablelands and, luckily, most of it is now protected within a massive southern tablelands conservation covenant. The lake itself is beautiful, a true peat lake with its water stained darker than coffee. The lake broods black and inky in a deep depression fringed by dense tarahinau (*Dracophyllum arboreum*) / matipo (*Myrsine chathamica*) forest. The shoreline is home to the largest known population of the threatened Chatham Islands toetoe (*Cortaderia turbaria*) on Rekohu and the murky waters of the lake are home to the endemic Chatham Island mudfish (*Neochanna rekohua*). Access to the lake is not so much difficult as tedious, involving a long day’s driving, then 4-wheel driving, then quad biking and then—finally—walking several kilometres across *Sporadanthus-Olearia-Dracophyllum* bog and valleys and ridgelines choked in dense tarahinau/matipo forest. Once the lake is reached you can’t actually see it, and to find it you have to plunge down a series of forested cliffs until, like magic the lake suddenly comes into view. I also have found that, for some reason, whenever I go there it either snows or rains (or—to be different—it does both).

In September 2007, when we gathered the *Plagiochila* that John Engel was interested in, Peter Heenan, local Department of Conservation Ranger (and Chatham Islander), Denny Prendeville, and I were sloggng and wading around the flooded lake margin collecting toetoe for an AFLP DNA

finger printing study to ascertain that species' overall genetic diversity. It was sleeting, we were already very wet and cold and not really that happy. Having fallen in the lake twice already, I was perhaps the least happy of the three, though whilst wringing out my sodden clothes I had the prescience of mind to collect a handful of a *Plagiochila* growing on the forest floor above the lake. I determined this as yet more *Plagiochila obscura* (a very common species on the islands) and thought nothing of it. Nor did David Glenny, who later examined the material in New Zealand; *P. obscura* is a very uniform and common species throughout New Zealand (Fig. 1). Yet, as we all should know, looks can be deceiving...



Fig. 1. A plant of *Plagiochila arbuscula* var. *arbuscula* growing on scoria on the Lava Caves track, Rangitoto Island. This specimen is bearing perianths. The Chatham Islands has this variety (which has long been known in New Zealand—incorrectly—as *P. obscura*) as well as the new endemic var. *rekohuensis*.

as a new variety. In the process, John and Gary Smith Merrill had also ascertained that *Plagiochila obscura* had been used incorrectly in New Zealand. They showed that this name was in fact a synonym of another New Zealand species, *P. stephensoniana*. That being the case, it meant that those plants that we had been (incorrectly) calling *P. obscura* should now be known by the next available name, *P. arbuscula* (see Engel & Smith Merrill 2010).

The Lake Rakeinui *Plagiochila* has now been described as *P. arbuscula* var. *rekohuensis*, the varietal epithet chosen specifically to honour the Moriori whose name for Chatham Island is “Rekohu” (Moriori being the indigenous people of that island group (King 1989)). This liverwort is not only new to New Zealand but it is the first endemic liverwort to be recognised from the islands (cf. Glenny & de Lange 2008).

The results are pleasing because they remove the past botanical anomaly of the islands. The absence of an endemic liverwort from the Chatham’s simply made no sense, especially when one considers that the much smaller and geologically younger Raoul Island supports at least two endemic liverworts (*Plagiochila pacifica* and *Radula cordiloba* subsp. *erigens*) (Renner & de Lange *in press*). The Chathams had to have at least one, with perhaps more yet to follow as John Engel, Matt von Konrat and Matt Renner work over the other gatherings they have on loan.

Acknowledgements

I would like to especially thank John Engel for his interest in the Chatham Island liverwort gatherings I have made and his freely given comments and insights into his on-going work for the New Zealand Liverwort Flora series. I thank David Glenny, John Braggins, Matt Renner and Matt

So turning the clock forward to 2009, John Engel, as part of his revision of the Plagiochilaceae for the next volume of the New Zealand Liverwort Flora (see Engel & Glenny 2008), had undertaken a routine interloan of specimens from that family from New Zealand herbaria. In the process, the Lake Rakeinui gathering of *P. obscura* (e.g., *P.J. de Lange* CH1230 & *P.B. Heenan*, AK 302646) caught John’s eye because of the distinctive tothing of the dorsal margin of the foliage leaves, which in this gathering were toothed along the base rather than, as is typical of this species elsewhere in New Zealand (and on the Chatham Islands), the distal portion of the leaves. Further, the male bracts were sharply acute rather than deeply toothed. John decided that this gathering did not match anything else on the Chatham Islands or elsewhere in New Zealand, for that matter, and that it deserved recognition

von Konrat for their help with working over the collections I have made from the Chatham Islands and their identifications and David, especially for providing his initial checklist in 2005 to form my starting point. On the Chatham Islands, I remain indebted to the Department of Conservation Area staff at Te One (Rekohu) and on Rangiauria, especially Amanda Baird, Bridget Gibb, Denny Prendeville, Kenny Dix, Ken Hunt and Maria Pascoe for field assistance, transport, accommodation, sorting out boats and of course, access across private land. I also thank John Sawyer (January 2006), Peter Heenan (February 2006, September 2007, May 2008, November 2008), Rob Smissen (February 2006) and Gary Houliston (May 2008) for their interest in my work and their participation and company in the field.

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Well known university professor dies

Professor John Edward Morton died at his home on Sunday 6 March 2011. Professor and head of the Zoology Department at Auckland University for many years, he will be remembered by the many New Zealand biologists who went to Auckland University in the second half of the 20th century. Among his academic awards, he was the last living New Zealander to hold an Hon FLS, one of two that New Zealanders held (the other was the late Dr Eric Godley). Though a zoologist and, more narrowly a malacologist, by training and research, he had very wide interests in all things environmental. He will probably best be remembered for the establishment of the Leigh Marine Research Station and the nearby marine reserve, but it must also be noted that he was very much involved in saving Whirinaki Forest. He was also a prominent lay member of the Anglican church in New Zealand. A great friend of New Zealand's natural heritage has passed on. He is survived by his wife Pat, their two children and three grandchildren. The Network offers its sympathy and condolences to the family.

Review of the National Pest Plant Accord list

MAF is now formally starting the review of the National Pest Plant Accord list. The focus of this review is on considering applications to add species to or remove them from the list rather than a complete, independent review of all of the species currently on the Accord list.

Please see the following links to information on the process for adding to or removing species from the Accord:

- Overview of process for amending the NPPA list (see webpage: <http://www.biosecurity.govt.nz/pests-diseases/plants/accord/amending-list.htm>)
- The webpage includes links to the application form (<http://www.biosecurity.govt.nz/files/pests/plants/nppa/nppa-proposal-form.doc>) and evaluation criteria (<http://www.biosecurity.govt.nz/pests-diseases/plants/accord/tag-criteria.htm>) to help guide applicants.

The submission period is open until 5.00 p.m. on Friday 29 April. Submissions should be sent to the NPPA Coordinator at nppa@maf.govt.nz. If you have any queries please contact the NPPA Coordinator (Katherine Garnett) on the NPPA e-mail address.

Feel free to circulate this through your networks.

Subscriptions for Individual, Student and Unwaged members

A new automated system for renewing Network membership is now ready to be launched. This automated system means:

- All members receive a reminder three weeks before their subscriptions are due. For most people this anniversary date will now be 15 December 2010.
- A second reminder will be sent one day before expiry, if the subscription remains unpaid.
- Finally, if the subscription remains unpaid after several months, the member's access to the members-only (password-protected) areas of the website will be cancelled.

As we are already well past the renewal date, it would be appreciated if you paid promptly on receipt of the first reminder. We would prefer that you renew your subscription using your credit card on-line (as for shop purchases). Paying by cheque or by internet banking is still possible and a subscription renewal notice may be downloaded from the website:

- www.nzpcn.org.nz/publications/Subscription-NZPCN.pdf

This has the necessary details for payment by cheque or by internet banking. If you use internet banking, please make sure that your name appears on our statement and preferably send an e-mail to info@nzpcn.org.nz informing us that you have made such a payment.

Any Individual, Student or Unwaged members who have already paid their 2010–11 subscription have had their anniversary date amended accordingly to the 15 December 2011. However, if anyone receives a reminder who has already paid their 2010–11 subscription, please send an e-mail to info@nzpcn.org.nz giving the details when the cheque was banked or the internet payment was made. Similarly, if you get a reminder but believe you are part of a Corporate or NGO membership, send an e-mail to info@nzpcn.org.nz. Conversely, if you don't get a reminder but think you should please also send us an e-mail.

Eric Scott, NZPCN Administrator

Website usage reaches new heights

If you think you are the only person using the Network website, then think again. Over 800 visits are made to the site each day or more than 300,000 every year. Each person, on average, views 26 images and spends 14 minutes on the site during each visit. Our library of reports is also heavily used with approximately 130 documents downloaded each day. The website now has more than 21,000 plant images and the new on-line quiz that can be used to test your knowledge of the flora. The on-line shop has sold hundreds of books and reports. The phenology recording system now has close to 3,500 records of flowering and fruiting events of native and exotic plants.

If you have ideas of how we can improve any aspect of the website or if you have plant lists or plant images that we can use on the site please e-mail them to us at info@nzpcn.org.nz.

On-line bookshop

For the information of new members of the Network (and a reminder to other members), the Network has a number of publications available for purchase on-line. Members may purchase them at a significant discount. To do this you must go to the website (www.nzpcn.org.nz) login and then go to "Visit the Network Shop" on the left hand side menu. The prices you will then see are the discounted ones. Among the popular publications currently are: *New Zealand Vascular Plant Checklist 2010*, *Introduction to Plant Life in New Zealand* and, of course, *Threatened Plants of New Zealand*.

CURRENT FORUM THREAD

- Does anyone have suggestions for native plants that can be used as bedding plants?

Plant quiz



Last month the new online plant quiz was launched on the Network's website. Hopefully, by now, many of you have had a go at the quiz and enjoyed testing your knowledge of the New Zealand flora. The quiz allows you to select from three levels of difficulty and to choose whether you want to use Latin or common names.

The Network plans to continually add to the pool of questions in the online quiz so people can keep challenging themselves. If you would like to contribute questions for the quiz, please contact us. When you send in your question you might also like to suggest a set of possible answers and indicate the level of difficulty you think your question(s) rate(s).

Contact: Jesse Bythell (jesse@biosis.co.nz)

Conservation implications for the geographic distribution of genetic variation: lessons for and from fierce lancewood

Leon Perrie, Museum of New Zealand Te Papa Tongarewa (leonp@tepapa.govt.nz) and Lara Shepherd, Institute of Molecular BioSciences, Massey University

Introduction

Many of New Zealand's plants are threatened or have disjunct distributions; some are both threatened and disjunct. We have recently published a paper on the geographic distribution of genetic variation in one such plant species: fierce lancewood, *Pseudopanax ferox* (Shepherd & Perrie 2011; available on request, leonp@tepapa.govt.nz). Here, we introduce that study and summarise its findings. We then discuss general implications for conservation management in New Zealand, before returning to the specifics of the conservation of *P. ferox* (Fig. 1).



Figure 1. *Pseudopanax ferox*. Clockwise from left: juvenile, Wanaka; apex of juvenile leaf, Waipori; adult leaves and flowers, Rimutaka; adult, Rimutaka. As a juvenile, *P. ferox* is distinguished from *P. crassifolius* by the three-dimensionality (rather than size per se) of the teeth along the leaf margins. This is especially evident at the apex, which appears to "bubble". The adult leaves of *P. ferox* are shorter, narrower, with nearly parallel-sides and a fairly blunt apex compared with *P. crassifolius*. Photos © Leon Perrie, Te Papa.

Pseudopanax ferox naturally occurs from the northern North Island to the southern South Island, but it has a very disjunct distribution with large distances separating many populations (Fig. 2). We were interested in the nature of these disjunctions. For instance, are the very isolated populations (e.g., that in the central North Island, Fig. 2) the result of long-distance dispersal? Is the population in the southern North Island simply an offshoot of northern South Island populations, or is it more related to other North Island populations? To address these questions, we examined the geographic distribution of genetic variation in *P. ferox*. We used a DNA-fingerprinting method (“microsatellites”) to determine how the individuals and the populations they came from were related.

We found four principal genetic clusters in *Pseudopanax ferox* (Fig. 2). Even within the clusters, populations were genetically different from one another. The level of genetic differentiation was very high compared with other trees investigated around the world. Rather than resulting from recent long-distance dispersal, the isolated populations are remnants from a time when *P. ferox* was more continuously distributed. Since *P. ferox* occurs on free-draining and/or high fertility substrates, and in relatively high light, this greater continuity likely dates to when the climate was drier, soils fresher, and tall forest less widespread. This was well before human settlement, although humans have undoubtedly had a devastating effect on populations in some areas (e.g., Northland, eastern South Island). Our genetic data are also the first consistent with the survival during the Last Glacial Maxima of a lowland tree in the south-eastern South Island. This corroborates palynology-based reconstructions that forests survived in the southern South Island during the last glacial, albeit probably only at small, sheltered sites.

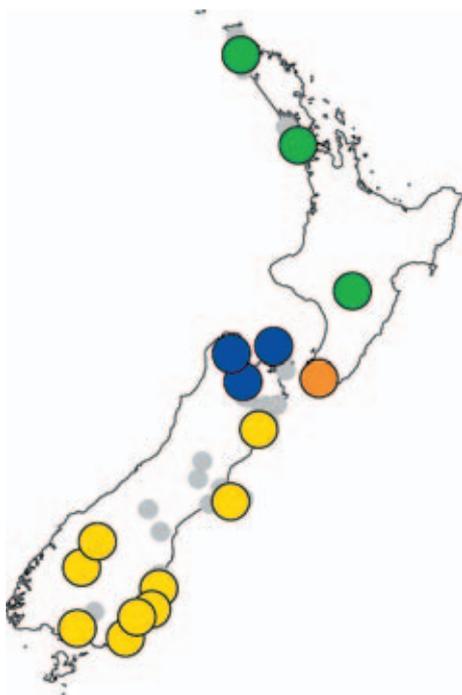


Figure 2. Distribution of *Pseudopanax ferox*. Large circles are populations included in our analyses, with colour denoting the four principal genetic clusters. The grey dots are unsampled populations represented by specimens in the AK, CHR, and WELT herbaria. The gaps evident on the map are largely genuine absences, particularly so in the North Island.

General conservation implications

The genetic variation of *Pseudopanax ferox* – and consequently also its evolutionary legacy and potential – is partitioned across its range. Because of the paucity of similar studies, the generality of this pattern in New Zealand remains to be established. But we suspect that the geographic structuring of genetic variation in many species will be similarly strong. Geographic genetic differentiation in New Zealand is likely to have been enhanced by the long-term persistence of populations throughout the country. For example, though much contracted, forest is thought to have survived throughout even the South Island during glacial periods (Shepherd et al. 2007; McGlone et al. 2010). Long existence, isolation, and low population sizes are all factors that contribute to

geographic genetic differentiation. Species that might, in contrast, be expected to show no/low geographic structuring of genetic variation include those with high dispersal rates (e.g., wetland plants; McGlone et al. 2001); however, geographic structuring of genetic variation is evident even in a fern (Shepherd et al. 2007) that is nevertheless well-capable of dispersal via its spores (Perrie et al. 2010). The rate of dispersal is presumably critical: rare dispersal events can found new populations, but a great deal of dispersal is required to randomise the geographic distribution of genetic variation (one migrant per generation is an oft-quoted threshold).

Disjunct populations founded by (recent) dispersal will be a genetic subset of their source; conserving the latter should be the priority in an evolutionary context based on contemporary differentiation. (Populations founded by dispersal should, however, not be completely neglected, since some will constitute the genesis of new species.) But, where there is geographic structuring of genetic variation, conservation efforts for a particular species should not be restricted only to core areas, or be allayed if it is secure in part of its distribution. Rather, as many disjunct (sets of) populations as possible should be conserved, because each is likely to hold a unique subset of the species' evolutionary legacy and potential. Genetic analyses can provide a clear basis for prioritisation of populations, as described below for *Pseudopanax ferox*, but are far from practical for each species. In lieu of species-specific data, a target of at least one sustainable population per Botanical Province (sensu Wardle 1991) in which the species is indigenous would provide some initial preservation of geographic genetic variation (with more populations per province for species occurring in only a few provinces).

The geographic genetic differentiation of populations reinforces the desirability of ecosourcing – using locally-sourced material in restoration efforts so as to preserve neutral and adaptive genetic patterns. Similarly, populations should not be mixed as part of conservation efforts unless good reasons have been documented for the particular species in question (e.g., reproductive failure in small populations; Barnaud & Houlston 2010). Finally, small populations, even when very isolated, should not be neglected *a priori*. It is apparent from *Pseudopanax ferox* that even small populations can harbour appreciable genetic variation (e.g., Northland, Moawhango), which may literally seed local restoration efforts.

We have assumed here a goal of conserving the evolutionary legacies and potential of species. But, why do so? We believe that conserving infra-specific patterns and processes is a logical extension of the desirability, even need, for guardianship and stewardship of individual species that is now so widely accepted. Protecting populations is necessarily subordinate to protecting species. But, to be comprehensive, conservation management must include preserving (or restoring) patterns within species that, in many cases, have developed over millennia, and the processes that generated them (including those relating to genetic connectivity/differentiation). Even if infra-specific conservation is accepted as an ultimate aim, it is admittedly a long-term prospect, with the present day requirements for many species and communities closer to triage than recovery.

Conserving as many wild populations as possible has long been regarded by many as desirable. The chief benefit of this is not preservation of the species per se, which is probably most efficiently achieved in a botanical garden or in tissue culture, but of the species' infra-specific patterns and the processes that generate them (which cannot be conserved in a freezer). However, given resourcing limitations, the conservation of populations should be targeted to best preserve the surviving evolutionary legacy (and potential). Many southern *Pseudopanax ferox* are protected and comparatively large; yet, some in the north have higher evolutionary priority.

Conserving *Pseudopanax ferox*

For *Pseudopanax ferox*, conserving representatives from each of the four principal genetic clusters identified by our analyses provides a clear basis for prioritisation (Fig. 2). In this context, the Rimutaka population in the southern North Island, comprising a mere c. 200 individuals on one

hillside, deserves most attention. With regard to the distinctiveness of its genetic legacy, this hillside is equivalent to all of the individuals from any of the other three principal clusters (with one of these encompassing the entire eastern and southern South Island). The Rimutaka population itself is reserved, on Department of Conservation land, and robust with healthy regeneration. However, the risk of losing this distinctive genetic subset could be mitigated by establishing auxiliary populations on nearby reserved land.

Conservation of the genetic cluster in the northern North Island could be centred on the larger and reserved Auckland population (i.e., Woodhill). Conserving this cluster's Northland and Moawhango (central North Island) populations would also be desirable, partly as auxiliaries. However, although we did not test it directly because of their small sizes, it is very likely that the Northland and Moawhango populations are genetically differentiated from Auckland. The Moawhango population (three individuals) is not reserved and only one of the four individuals known from Northland is within reserved land. Supplemental planting on reserved land is needed to ensure long-term persistence of the Northland and Moawhango populations; seedlings are already being propagated for the latter (Viv McGlynn, pers. com.). Searches for as yet unrecorded individuals/sub-populations are also highly desirable.

The genetic cluster in the eastern and southern South Island is the most secure, with the most individuals and populations and with many reserved. The status of the genetic cluster in the northern South Island is less clear. Though encompassing several populations, many are on private land and no definite constituents are large (Conway 2006). Thus of interest is a sizeable population lying between the established boundaries of the northern South Island cluster and the eastern and southern South Island cluster (Jones 2001). Its affinities are unknown but, if they were to the northern South Island cluster, it would be a considerable boon to the conservation of this cluster in significantly increasing the number of individuals ascribed to it. The private landowners of this population presently block access to it by anyone associated with a public agency.

Acknowledgements

We are grateful to many for help with sampling and/or information about *Pseudopanax ferox*, as detailed in the acknowledgements of our *Molecular Ecology* paper.

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The rediscovery of *Parahebe canescens* (syn. *Veronica lilliputiana*) on the Otago Peninsula

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Parahebe canescens.

The Wickliffe Bay area on the southeastern side of the Otago Peninsula, with its complex of dunes and associated damp turfy dune hollows, has long been recognized as habitat for several plants with restricted distribution on the Peninsula. In this regard, Allen (1994) mentioned *Parahebe canescens*, *Glossostigma elatinoides*, *Elatine gratioloides*, *Gratiola sexdentata* and *Hydrocotyle hydrophila*, but noted that the first three have not been seen there recently. Johnson (2004) also highlighted *P. canescens*, *G. elatinoides* and *E. gratioloides* as plants that have not been observed for several decades, along with *Myosurus minimus* subsp. *novae-zelandiae*, which was recorded at Wickliffe Bay before 1940. In relation to *P. canescens*, he noted “Collected at Wickliffe Bay by B.C. Aston in 1896 but not seen there in recent years.”

With those historic plant records in mind, during October 2010, I headed out to Okia Flats at Wickliffe Bay with the intention of investigating an ephemeral wetland I had previously spied. This wetland had stood out because it was situated beyond the reserve boundary fence and was still subject to grazing. From a distance, it appeared to still retain low turf vegetation. On close inspection, the vegetation turned out to be dominated by *Lobelia perpusilla*, itself a very local plant on the Peninsula, along with *Galium perpusillum*. After a good look around, I concluded it was an excellent example of ephemeral wetland turf composed almost entirely of native species. As a final task, I cut out a small divot of turf in order to grow on and eventually photograph *Lobelia perpusilla*.

Back at my Dunedin home, I periodically checked the pot of *L. perpusilla* and, on one such occasion, noted a small creeping herb that I initially dismissed as a new shoot of *L. perpusilla*. Under the hand lens, however, I realised it was something very different and, after consulting a couple of references, determined the plant to be *P. canescens*. By late January 2011, the plant had still not flowered but I wondered if it might be flowering in the wild. On 27 January I made another trip back to Okia Flats and this time the ephemeral wetland was dotted with masses of white *Lobelia* flowers. At the southwestern end there were a couple of patches of blue flowers which, sure enough, turned out to be *P. canescens*. After looking through its potential habitat there, it seems to be present in just a strip c. 3 m × 0.5 m on the gentle slope of the wetland depression.



The ephemeral wetland with *Lobelia perpusilla* and *Parahebe canescens*.

Much of the dune wetland complex on Okia Flat was formally reserved in 1991, following its joint purchase by the Yellow-eyed Penguin Trust and the Dunedin City Council. Stock grazing ceased over most of the reserve in 1991 and vegetation monitoring (Johnson 1998) has shown released growth of naturalized grasses and rushes. Johnson noted that “several of the predominant native turf herbs have shown an ability to persist, although it is not clear whether all of the diverse turf flora will do so in the long term.”

Although the area with *P. canescens* falls within the cadastral boundary of Okia Reserve, the boundary fence line adopted has meant it is managed as part of a neighboring paddock that is heavily grazed by both sheep and rabbits. I speculate that this grazing may have been beneficial in helping maintain a dense low turf of herbaceous plants. Rogers & Wiser (2010) noted that persistence of native coastal turfs may depend on disturbance-induced early successional community states and that ungulate disturbance apparently benefited the maintenance of several threatened and uncommon herbs in native turfs. If this is the case at Okia Flat, then we might have rabbits and sheep to thank for the persistence of *P. canescens* at this, its only remaining coastal site in New Zealand.

References

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The role of botanic gardens in plant invasions

A soon-to-be-published article in *Trends in Evolution and Ecology* (Hulme 2011) discusses the role of botanic gardens in plant invasions. A majority of the documented examples come from islands. The Abstract is as follows:

Increasing evidence highlights the role that botanic gardens might have in plant invasions across the globe. Botanic gardens, often in global biodiversity hotspots, have been implicated in the early cultivation and/or introduction of most environmental weeds listed by IUCN as among the worst invasive species worldwide. Furthermore, most of the popular ornamental species in living collections around the globe have records as alien weeds. Voluntary codes of conduct to prevent the dissemination of invasive plants from botanic gardens have had limited uptake, with few risk assessments undertaken of individual living collections. A stronger global networking of botanic gardens to tackle biological invasions involving public outreach, information sharing and capacity building is a priority to prevent the problems of the past occurring in the future.

Reference

- Hulme, P.E. 2011: Addressing the threat to biodiversity from botanic gardens. *Trends in Ecology and Evolution*, in press.
Editor's note: The invitation is extended to any member from the botanic garden sector (or elsewhere, for that matter) to respond to this paper after having read it.

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):

XVIII International Botanical Congress

Melbourne 23–30 July: probably the cheapest option for New Zealanders to ever be able to attend this international event. Registrations are now open.

Further details: www.ibc2011.com/news/Issue3-1.htm.

Conservation Biology Conference

Come to Christchurch! The 25th International Congress for Conservation Biology will be held in Christchurch, New Zealand, 28 November – 2 December 2011. Join us for five days as we celebrate 25 years of groundbreaking research, premier networking opportunities, and dynamic discussions among the leading minds in conservation biology. This year's theme, *Engaging Society in Conservation*, addresses biodiversity around the world—specifically biodiversity's continued declines at an ever-increasing pace, while much of society carries on with business as usual. How can conservation biologists engage with the broader society to achieve positive outcomes for conservation without compromising our scientific rigour or integrity? Do you have a solution to share? Remember when you met Ed Monton in Canada in 2010; 2011 is the year of Kia Ora the Kakapo! Stay tuned for the first meeting between Ed and Kia Ora, coming soon!

Information: www.conbio.org/2011 or contact the scientific programme committee at 2011@conbio.org.

50th Anniversary of the Hamilton Junior Naturalist Club

Easter, 22-25 April: Te Kauri Lodge, Kawhia Road, Oparau. Come for a day or the whole weekend! All former members are warmly invited.

Contact: jennip@ihug.co.nz, or search Junats on Facebook for more information.

Auckland Botanical Society

Meeting: Wednesday 6 April at 7.30 p.m. a talk by Tim Martin titled 'Endemic cloud forest of Rarotonga'. **Venue:** Unitec School of Health Sciences, Gate 4, Building 115. Room 2005.

Contact: Maureen Young, e-mail: youngmaureen@xtra.co.nz.

Field trip: Saturday 16 April to the Hunua Ranges. Leader: Peter Hutton.

Contact: Maureen Young, e-mail: youngmaureen@xtra.co.nz.

Field trip: Friday 22 to Monday 25 April, Kaimais Easter camp (combined Auckland, Waikato and Rotorua Botanical Societies event), see below for details.

Leader: Eila Lawton.

Waikato Botanical Society

Field trip: Friday 22 to Monday 25 April, Kaimais Easter Camp (combined Auckland, Rotorua and Waikato Botanical Societies event). **Venue:** Ngamuwahine Outdoor Education Lodge, Lower Kaimais. **Cost:** \$25.00 per person per night, which may be reduced depending on numbers. Food is extra (provided by the Auckland Bot Soc with shared cooking duties). **Bookings and deposit:** to be made by 12 April.

Contact: Jan Butcher,
ph: 09 236 9722,
mobile: 0272413701,
e-mail: jjbutcher@ps.gen.nz

Rotorua Botanical Society:

Field trip: Saturday 2 April to Wetlands Ohope Scenic Reserve, Burma Rd wetlands and Waitane Scenic Reserve. **Meet:** The car park, Rotorua, at 8.15 a.m. or car park at the bottom of Ohope Hill at 9.30 a.m. **Grade:** easy-medium.

Leader: Sarah Beadel,
ph: 07 345 5912,
e-mail: Sarah@wildlands.co.nz

Field trip: Saturday 16 April the Okareka Mistletoe Restoration Project Weed Control Work Day. **Meet:** corner Summit and Loop Rds (lake end) at 8.45 a.m. **Grade:** medium-hard, activities suitable for all ages and abilities will be provided.

Leader: Paul Cashmore,
ph: 07 348 4421 (hm),
ph: 07 349 7432 (wk),
e-mail: pcashmore@doc.govt.nz

Field trip: Friday 22 April to Monday 25 April to Ngamuwahine, Kaimai Mamaku Forest Park (combined Auckland, Rotorua and Waikato Botanical Societies event)

Contact: see above.

Wanganui Museum Botanical Group

Field trip: Saturday 2 April to Tennen's Bush, Campbell Road, Brunswick. **Meet:** at Police Station 11.30 a.m.

Leader: Colin Ogle,
ph: 06 347 8547,
e-mail: robcol.ogle@extra.co.nz

Meeting: Tuesday 5 April at 7.30 p.m. a talk by Abbie Jury titled 'Garden rooms and the magpie instinct of New Zealand gardeners to collect ideas'. **Venue:** Museum's Davis lecture theatre.

Contacts: Robyn and Colin Ogle,
ph: 06 347 8547,
e-mail: robcol.ogle@extra.co.nz

Field trip: Saturday 30 April to Parikino swamp forest, Whanganui River Road. Mostly easy walking; paddling optional. **Meet:** Police Station 9.00 a.m.

Leader: Clare Ridler.

Wellington Botanical Society

Meeting: Monday 21 March at 7.30 p.m. a talk by Kath Dickinson, University of Otago, titled 'Putting the 'B' back in Biodiversity—what you can learn just from your backyard'.

Venue: lecture theatre MYLT101, ground floor Murphy Building, west side of Kelburn Parade. Enter building off Kelburn Parade about 20 m below pedestrian overbridge.

Field trip: Saturday 2 April to the coastal cliffs, Breaker Bay to Tarakena Bay. **Meet:** 9.00 a.m. at Breaker Bay car park.

Leader: Frances Forsyth, ph: 04 384 8891, **deputy-leader:** Sunita Singh, ph: 04 387 9955.

Meeting: Monday 18 April at 7.30 p.m. a talk by Prof. Phil Garnock-Jones titled 'Sexual systems in land plants'

Venue: lecture theatre MYLT101, ground floor Murphy Building, west side of Kelburn Parade. Enter building off Kelburn Parade about 20 m below pedestrian overbridge.

Field trip: Friday 22 to Sunday 24 April Easter trip Northern Wairarapa. **Meet:** 9.15 a.m. Friday, Dorset Square Native Reserve, Moore St corner SH2, Featherston. Allow 1.25 hours from Wellington. **Accommodation:** Ron & Ngaire Burns' shearers' quarters, 3 bedrms/10 beds; camping possible, 558 Waihoki Valley Rd, Tiraumea, RD3, Eketahuna. **Cost:** donation tba. **Food:** dinners Friday & Saturday, potluck; breakfasts & lunches, self-catering.

Contacts: Sunita Singh, ph: 04 387 9955, 027 4052 987; Chris Horne, ph: 04 475 7025, mobile: 027 474 9300.

Nelson Botanical Society

Field trip: Wainui Bay Sunday 17 April. **Meet:** at Selwyn Place between the church steps and the large gum tree at 8.00 a.m. or at Pohara Hall, Golden Bay, at 9.45 a.m.

Leader: Shannel Courtney, e-mail: scourtney@doc.govt.nz

Field trip: Thursday 21 to Monday April 25 Easter Camp at Pine Valley Lodge, north bank of the Wairau River. **Cost:** \$15.00 per person per night.

Leader: Cathy Jones, ph: 03 546 9499, e-mail: jonesc@doc.govt.nz.

Canterbury Botanical Society

Meeting: Friday 1 April at 7.30 p.m. a *Coprosma* key workshop led by David Glenny. **Venue:** room A5, Canterbury University.

Contacts: Miles and Gillian Giller, ph. 03 313 5315.

Field trip: Saturday 9 April to Omahu Bush, Summit Road, Port Hills.

Note: Because of earthquake damage both of these activities may have to change; please make contact to confirm times and places.

Botanical Society of Otago

Meeting: Wednesday 30 March a PhD proposal talk by Britt Cranston titled 'What is the role of facilitation in structuring alpine communities?' **Note:** Special time and venue, Union St Lecture Theatre, corner Union St West and Great King St.

Contact: [Trish Fleming](#), ph: (03) 479 7577.

Meeting: Wednesday 13 April at 12.30 p.m. a talk by Annika Korsten titled 'Plant strategies along small-scale snowmelt gradients in New Zealand'. **Note:** special time and venue: Union St Lecture Theatre, Corner Union St West and Great King St.

Contact: [Trish Fleming](#), ph: (03) 479 7577.

Field trip: Saturday 16 April to Akatore. **Start:** 9:00 a.m. at the Botany Department car park.

Contact: [Robyn Bridges](#), ph: 03 479 8372.