



TRILEPIDEA

Newsletter of the New Zealand Plant Conservation Network

No. 201

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Deadline for next issue:
Friday 16 September 2020

SUBMIT AN ARTICLE TO THE NEWSLETTER

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

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

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

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

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NEW ZEALAND

PLANT OF THE MONTH, p. 2



Gratiola concinna.
Photo: Jeremy Rolfe.

New exotic host for the dwarf mistletoe *Korthalsella salicornioides*

John Barkla (mjbarkla@xtra.co.nz)

On 16 August 2020, while walking the Abel Tasman Coastal Track, I observed and photographed the dwarf mistletoe *Korthalsella salicornioides* [Viscaceae] hemiparasitic on its gorse (*Ulex europaeus* [Fabaceae]) host. One gorse shrub was observed hosting several large plants of *Korthalsella salicornioides* (Fig. 1).



Figure 1. *Korthalsella salicornioides* hemiparasitic on gorse. Abel Tasman National Park, 16 August 2020. Photo: John Barkla.

The site is on gentle hill country, approximately 60 metres above sea level and located about halfway between The Anchorage and Watering Cove. Trackside vegetation here comprises coastal shrubland dominated by kanuka (*Kunzea ericoides*) with manuka (*Leptospermum scoparium*) and prickly mingimingi (*Leptocophylla juniperina* subsp. *juniperina*) both common. Gorse is sporadically present, occupying otherwise bare ground that may be a result of the track's construction and maintenance.

Korthalsella salicornioides was abundant on host kanuka growing in close proximity to the gorse shrub host. I did not observe it on any other associated taxa.

Sultan et al. (2018) documented the host range of New Zealand's *Korthalsella* mistletoes and determined the degree of host specificity in each species based on occurrence data. Of New Zealand's three *Korthalsella* species they found *Korthalsella salicornioides* to be the most host-specific, with 96% of the total records from *Leptospermum scoparium* s.l. [Myrtaceae] and *Kunzea robusta* [Myrtaceae] hosts. Overall, they found the hosts recorded for *Korthalsella salicornioides* comprise 26 taxa from six genera in five families.

The Fabaceae family, of which gorse belongs, has previously been identified as a *Korthalsella salicornioides* host family (Sultan et al. 2018) through the recording of *Sophora chathamica* and *S. microphylla* hosts.

Hosts for *Korthalsella salicornioides* are predominantly indigenous with just three exotic hosts, *Erica lusitanica* (Ericaceae), *E. arborea* and *E. vagans* recorded (Sultan et al. 2018). The inclusion of gorse (*Ulex europaeus*) increases the list of known exotic hosts of *Korthalsella salicornioides* to four.

Reference

Amir Sultan, Jennifer A. Tate, Peter J. de Lange, David Glenny, Jenny J. Ladley, Peter Heenan & Alastair W. Robertson (2018). Host range, host specificity, regional host preferences and genetic variability of *Korthalsella* Tiegh. (Viscaceae) mistletoes in New Zealand. *New Zealand Journal of Botany*, 56 (2): 127–162. DOI: [10.1080/0028825X.2018.1464476](https://doi.org/10.1080/0028825X.2018.1464476)

PLANT OF THE MONTH – *GRATIOLA CONCINNA*

Rowan Hindmarsh-Walls (rowan.hindwalls@gmail.com), Anna Henderson

The plant of the month for August is *Gratiola concinna*, one of four *Gratiola* species native to the New Zealand region. Its range is reasonably broad, as it can be found throughout the North and South Islands but is very localised. It prefers wet or poorly drained turf on the edges of waterbodies and can occasionally be aquatic in shallow water. It can also be found in muddy depressions in forest clearings.

G. concinna is a widely creeping, prostrate herb that forms leafy mats. It has intertangled branches and rounded fleshy leaves in opposite pairs. Leaves range from yellow-green to dark green and usually have purple spots. They are often irregularly toothed but sometimes entire. Both stems and leaves are usually hairy. The species has distinctive tubular flowers that are white with a yellow base and pink veins. They have four petals and are 10–12 mm long. Flowers have a faint sweet scent.



Gratiola concinna. (left) foliage and (centre) growth habit, Tiropahi Valley, Paparoa National Park, 15 August 2020; (right) flower, Kuratau, central North Island, 24 January 2009. Photos: (left, centre) Rowan Hindmarsh-Walls; (right) Jeremy Rolfe.

None of the other native *Gratiola* species are very similar to *G. concinna* but it could be confused with the Australian *G. nana*. It differs from *G. nana* in that it has larger flowers and obovate to suborbicular leaves rather than elliptic to narrow oblong leaves.

G. concinna is currently listed as Threatened – Nationally Endangered. Its conservation status has worsened considerably since 2004 when it was listed as Threatened – Gradual Decline. It has disappeared from some locations where it has been previously found. Habitat destruction through land modification and wetland drainage is a major threat to this species. It is also at risk from invasive aquatic weeds. The species is highly variable and there may be more than one entity currently included within it. More taxonomic work is needed to see whether there are genetic as well as morphological differences between the regional variants.

The genus *Gratiola* is in the Plantain family, *Plantaginaceae*. The genus name *Gratiola* means “little beauty” and the epithet *concinna* means “charming and elegant”.

You can view the NZPCN website factsheet for *Gratiola concinna* at: <https://www.nzpcn.org.nz/flora/species/gratiola-concinna/>

Reference

Rare Species – Guidance for Managing Rare Species in Plantation Forests. <https://rarespecies.nzfoa.org.nz/species/gratiola-concinna/> Website accessed 24/08/2020

Schoenus caespitans is a distinct species

Lara Shepherd (lara.shepherd@tepapa.govt.nz), Pat Enright, Leon Perrie

The endemic New Zealand sedge *Schoenus caespitans* (Figure 1) has alternatively been recognised as a separate species or as a variety of *S. apogon* (Figure 2). Pat Enright had noticed both taxa growing in sympatry in the Wairarapa and in 2018 contacted Lara to see if DNA sequencing could be used to test their taxonomic status.



Figure 1 (left). *Schoenus caespitans* from Pigeon Bush, Featherston. Collected 12 January 2019. Te Papa (WELT SP108259).
Figure 2 (right). *Schoenus apogon* from Pigeon Bush, Featherston. Collected 12 January 2019. Te Papa (WELT SP108258).

We undertook DNA sequencing at two sites where *S. caespitans* and *S. apogon* grow together. At both of these sites *S. caespitans* and *S. apogon* were morphologically and genetically distinct from each other. Therefore, each should be recognised as separate species. The results of this research have just been published in the *New Zealand Journal of Botany* (Shepherd et al. 2020).

Schoenus caespitans is endemic to New Zealand where it is found in coastal to subalpine habitats from the northwest Ruahine Ranges to South Canterbury. It is classified as Naturally Uncommon with a Data Poor qualifier in the latest New Zealand Threatened Plant Ranking. There are few recent records of this species in herbaria or on iNaturalist, especially in the South Island. We would welcome any new observations so that a more informed threat ranking can be made for this species.

A number of morphological characters distinguish *S. caespitans* and *S. apogon* but we found the combination of glume colour and the relative length of the culms compared to leaves easiest to apply. *Schoenus caespitans* has culms that are usually shorter than the leaves, whereas *S. apogon* usually has longer culms than leaves. The glumes of *S. caespitans* have a broad cream centre, while those of *S. apogon* are rarely cream near the midrib.

We would also be interested to hear of observations of the form of *S. apogon* described by Thomas Kirk as *S. vacillans* (Kirk 1878), which we did not sample for this study. This form has loosely clustered inflorescences (Figure 3) and has only been recorded from a handful of locations, all in the northern half of the North Island. As with *S. caespitans* there are few recent herbarium records.

References

- Kirk T. 1878. Descriptions of new plants. Transactions and Proceedings of the New Zealand Institute 10:419–421.
- Shepherd LD, Enright P, Perrie LR (2020) Evidence for the recognition of *Schoenus caespitans* as a separate species from *Schoenus apogon*. New Zealand Journal of Botany. <https://doi.org/10.1080/0028825X.2020.1796715>. (E-print available here: <https://www.tandfonline.com/eprint/WSSBGTXWJPI4WAPIUZ6P/full?target=10.1080/0028825X.2020.1796715> or email Lara for a copy).

Figure 3. The form of *Schoenus apogon* described as *S. vacillans*. Collected April 1869 by Thomas Kirk, Source of Matai River, Mount Wynyard, Cape Colville Peninsula. CC BY 4.0. Te Papa (WELT SP020660).



The Ōtanewainuku Kiwi Trust was recently the recipient of \$1500.00 for possum control donated by the New Zealand Plant Conservation Network and members of the Australasian Systematic Botany Society

Bruce Fraser (Chair, Ōtanewainuku Kiwi Trust)

Ōtanewainuku Kiwi Trust was formed in 2002 with the primary objective of protecting a small remnant population of kiwi in 900ha of the DOC Ōtanewainuku conservancy. Ōtanewainuku (1350ha in total) is 1 of 62 Recommended Areas of Protection in the Ōtanewainuku Ecological District (19,922ha) that was identified in the 1994 “Ōtanewainuku Ecological District Protected Natural Area Report” carried out by Wildland Consultants Ltd for DOC.

In those formative years a trapping network for mustelids was set up and Philproof bait stations were installed for possum and rat control. This network of traps and bait stations has been operational to this day and has increased to protect 1200ha from pests and predators.

In 2018 we initiated an Integrated Pest Management Plan to introduce kill traps to enhance the toxin-based bait stations in the control of possums and to hopefully reduce our overall toxin use. Research showed that the Sentinel possum trap was our best option but it needed to be made user-friendly for safe volunteer use. Dave Edwards, a retired mining engineer and long-time Ōtanewainuku supporter, offered his services and, with a combination of design and testing, developed a few basic “extras”. These “extras” included a setting tool that has turned a basic Sentinel possum trap into a safe, easy-to-set trap that our volunteers are keen to use. A short video clip of the trap with the additions being set is available at <https://www.youtube.com/watch?v=h4VanCz8feQ>.

The \$1500.00 has allowed the Trust to purchase materials to make the necessary “extras” and to clean and galvanise 350 donated, used sentinel traps which we have started to install as part of our overall Integrated Pest Management Plan. Initial results are looking very promising and we are hoping for an improvement on our November 2019 2.1% RTC monitoring for possums (a relatively low possum presence) when we do our monitoring at the end of this year.



Sentinel trap: (left) setting tool in action, 23 April 2020; (right) trap with kill, 18 May 2020. Photos: Dave Edwards.

Sited between Tauranga City, Rotorua and Te Puke, the unlogged landscape of Ōtanewainuku is a prime example of a lowland podocarp, broad leaf forest. Large emergent rimu are common, with tawa, kamahi, rewarewa, kohekohe, pukatea, kahikatea, tanekaha, tōtara and nīkau helping to form the main forest canopy and part of the over 300 indigenous plant species. Bird species such as kereru, miromiro (tomtit), tūi, pōpokatea (whitehead), korimako (bellbird), pīwakawaka (fantail), toutouwai (North Island Robin) and kiwi flourish in the protected area. Kōkako have been successfully reintroduced and the small population is developing, with a census planned for September 2020.

Of interest to NZPCN members may be the large number of *Brachyglottis kirkii* var *kirkii*, Kirk's daisy / kohurangi, that are thriving in Ōtanewainuku forest. In 2019 flowering plants were very obvious. In one 500 metre stretch of road near the main car park, 26 plants were visible from the road with the largest plants estimated to be 1.5m × 1.5m. As a listed "at risk, in decline and threatened in its normal habitat" plant, Trust members were amazed at the show from this usually shy epiphyte. Drone footage is available on the OKT website kiwitrust.org on the home page click "Resources" then "Photos & videos" and view under heading "DOC for Port Blakely". There are 6 short drone videos.



Brachyglottis kirkii var. *kirkii*, Otanewainuku Forest: (left) flowering plant, 12 September 2017; (right) flowers, 16 September 2019. Photos: Dave Edwards.

OKT would like to take this opportunity to thank the NZPCN Council members and the 2019 conference attending members of the Australasian Systematic Botany Society for their generous financial contribution which will allow us to further protect the fauna and flora of the Ōtanewainuku Forest.

We have lots more information on our website www.kiwitrust.org and we also post regularly on Facebook @otanewainuku and Instagram otanewainukukiwitrust. We have three great walks at Ōtanewainuku and we'd love to see you there sometime.

First record of *Zwackhia viridis* (Lecanographaceae) from the Chatham Islands

Andrew J. Marshall (eco@lgm.kiwi) & Peter J. de Lange (pdelange@unitec.ac.nz), School of Environmental & Animal Sciences, Unitec Institute of Technology, Auckland.

Our knowledge of the Chatham Islands lichenized mycobiota is steadily growing from the 48 species recognized from the islands by Galloway (2007). Since 2008 there has been a concerted effort to collect lichens from the islands by visiting lichenologists resulting in a current, as yet unpublished, listing for the islands of c.352 lichen taxa (de Lange unpubl. data). Along the way a new, seemingly endemic lichen, *Lecanora kohu*, has been described from the Chathams (Printzen et al. 2017), a fitting replacement for the previous assumed endemic *Caloplaca maculata* (Galloway 2004) which has since been found on the coastline south of Dunedin, New Zealand (de Lange 2019).

As with other lichen listings for the main islands of New Zealand, the most under-represented groups recorded from the Chatham Islands are those with a crustose growth habit, this despite the fact that ‘lichen crusts’ are the main contributors to the 2300 lichen taxa currently recognized from the New Zealand archipelago (de Lange et al. 2018; Marshall et al. 2019). Their under-representation in Chatham Islands lichen collections is in part because they can be hard to collect (especially off rocks) and also because they are much harder to identify than many of the larger ‘leafy’ (foliose) lichens. Crust identification often requires a myriad of chemical spot tests not only of the lichen thallus, but the fruiting bodies internal structure, spore bearing asci and the spores (ascospores) themselves. Noting the colour reactions (or lack thereof) using sodium hypochlorite—the ‘C’ test, potassium hydroxide—the ‘K’ test, iodine—the ‘I’ test, and para-phenylenediamine—the ‘Pd’ test, is often critical; as also is whether the various lichen structures fluoresce under an ultra-violet light. Even with those tests, and careful measurement of ascus and ascospores, further testing using thin-layer chromatography and DNA sequencing may still be necessary. This is of course a lot of work, such that one identification can sometimes take a day or so of patient dissection and microscopy supplemented with the chemical tests aforementioned. This is worth it though. Lichen crusts are more varied than people would think, they come in all different shapes and sizes, and many are stunningly beautiful, others though truly fit the adage that ‘beauty is in the eye of the beholder’.

Accepting then that Chatham Island lichen crusts are still poorly collected, since 2018 there has been renewed effort to sample crustose lichens by the junior author. Most of those collections have ended up at the UNITEC herbarium on the Auckland’s Unitec Institute of Technology (now included in a larger New Zealand Institute of Technology) campus. There, staff have started to work over the crustose lichens of the northern North Island, and, as specimens are received, those from the Chatham Islands. Further, as expertise grows in particular genera a concerted effort has been made to collect these. So for example, following the publication on New Zealand *Pyrenula* by Marshall et al. (2019) the call was made to sample better the Chatham Island lichens of this genus. *Pyrenula* are a great example of ‘beauty is in the eye of beholder’; most specimens resemble a splotch of dried greenish or whitish-coloured varnish covered in black spots (Fig. 1.). The first step toward their identification requires digging out the black spots (the spore bearing perithecia) and extracting the spores – usually a fiddle and all too often one finds mites have beaten you to it and eaten all of the spores.

Despite this all too common annoyance, last year during visits to Rekohu / Wharekauri / Chatham Island, a range of *Pyrenula* lichens were collected. However, lichen crust collections are rarely ‘pure’



Figure 1. *Pyrenula nitidula* as seen growing on the trunk of nikau (*Rhopalostylis sapida*), Nikau Bush Conservation Area, Rekohu / Wharekauri / Chatham Island. Photo: P.J. de Lange.

samples of one species, they often comprise admixtures of several lichens growing interdigitated. One such admixed *Pyrenula* sample came from nikau (*Rhopalostylis sapida*) (Fig. 2) at Nikau Bush Conservation Area. That sample contained a dominance of *Pyrenula nitidula* (Fig. 1, UNITEC 11762), the intended collection. But there was also plenty of *Megalalaria maculosa* (Fig. 3, UNITEC 11761), and another innocuous white crustose lichen—some kind of graphid or scribble lichen (Fig. 4, UNITEC 12163).

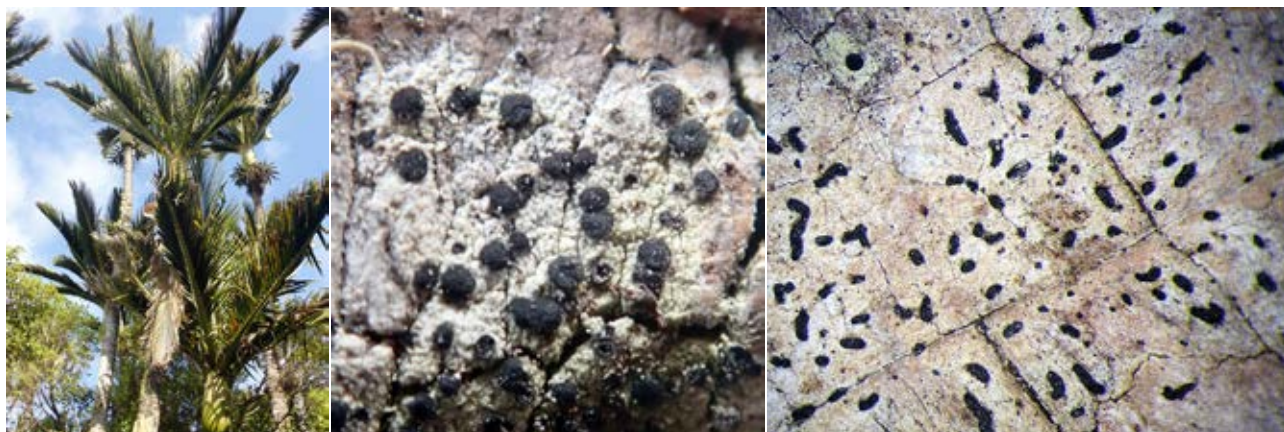


Figure 2 (left): A stand of nikau (*Rhopalostylis sapida*), Nikau Bush Conservation Area, Rekohu / Wharekauri / Chatham Island. Photo: P.J. de Lange.

Figure 3 (centre): *Megalalaria maculosa* as seen on the trunk of nikau (*Rhopalostylis sapida*), Nikau Bush Conservation Area, Rekohu / Wharekauri / Chatham Island. Photo: P.J. de Lange.

Figure 4 (right): *Zwackhia viridis* as seen on the trunk of nikau (*Rhopalostylis sapida*), Nikau Bush Conservation Area, Rekohu / Wharekauri / Chatham Island. Photo: P.J. de Lange.

Graphid lichens are the common name given to a grouping of lichens whose fruiting bodies (lirellae) often look like black scribbles or lines (Fig. 5). The one found on the nikau bark sample however, was a clear cut graphid, though in this case the black lirellae were rather unprepossessing (Fig. 4)

Preliminary examination suggested that the graphid ‘by catch’ in the nikau sample might be a species of *Opegrapha*. However, the Chatham specimen has very long ($42.5 \times 6\text{--}8 \mu\text{m}$), fusiform ascospores (Fig. 6), each bearing up to 18 tabular locules (compartments). Unable to resolve the probable species, images were taken and these were sent to Dr Robert Lücking in the Botanischer Garten und Botanisches Museum, Berlin. Robert suggested that the specimen might be a species in the genus *Zwackhia*, and, as we lacked the critical literature, he kindly sent an electronic copy of Ertz (2008).

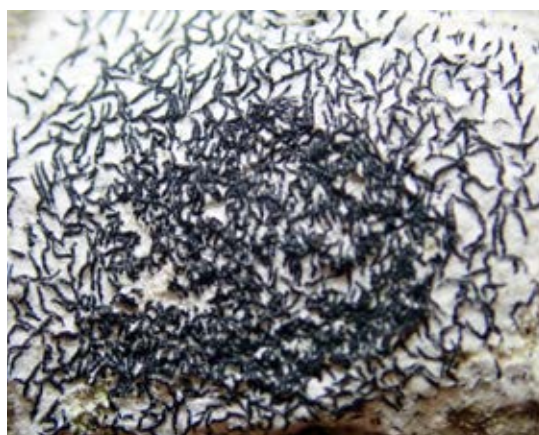


Figure 5. *Arthonia atra* showing the classic ‘scribbly’ fruiting bodies (lirellae) that give the common name ‘graphid’ to these sorts of lichens. This specimen was noted on the trunk of Chatham Island ngaio (*Myoporum semotum*), Kaingaroa Rekohu / Wharekauri / Chatham Island. Photo: P.J. de Lange.



Figure 6. *Zwackhia viridis* ascospore extracted from the specimen collected from Nikau Bush Conservation Area, Rekohu / Wharekauri / Chatham Island. Photo: A.J. Marshall.

Ertz (2008) did a major revision of the bark-inhabiting (corticolous) *Opegrapha* (some of the species treated there as *Opegrapha* are now placed in *Zwackhia*). To work the key to the “*Opegrapha*” in Ertz (2008) also required another range of dissections of the lirellae, including cutting cross-sections of these and then staining those with a precise sequence of iodine and potassium hydroxide to check for

colour reactions (Fig. 7). Though a protracted process the result was a definitive identification of the Nikau Bush specimen as an example of *Opegrapha viridis*—now treated as *Zwackhia viridis*. Key characters of *Zwackhia viridis* noted in the specimen examined included a continuous excipulum, the absence of an iodine (blue) reaction in subhymenial tissue, and the absence of oil droplets in the hymenial gel. The hymenial tissue was however iodine positive (red) with a distinct blue reaction when flushed with potassium and iodine. The thallus of the specimen lacked an ultra-violet reaction. The ascus measured $75 \times 62 \mu\text{m}$, with apex of the asci presenting a distinct blue ring after flushing with potassium and iodine. The ascospores however, lacked an iodine reaction.

Zwackhia viridis has hitherto not been recorded from the New Zealand archipelago (de Lange et al. 2018), it is an eastern Australian species (Ertz 2008—as *Opegrapha viridis*). With a distribution such as this, its presence on the Chatham Islands probably means it has been overlooked in New Zealand, or more likely, it has already been collected and lodged within our nation's herbaria but such specimens have as yet not been recognised as that species. While it is unlikely



Figure 8. *Leucopogon parviflorus* a species of 'mingimingi' abundant on Rekohu / Wharekauri / Chatham Island which is otherwise known only from eastern Australia. It has never been found on the main islands of New Zealand. Photo: P.J. de Lange.

that *Zwackhia viridis* has somehow bypassed the larger islands of New Zealand to make landfall on the Chatham Islands, this biogeographic anomaly is still possible. After all, *Leucopogon parviflorus* (Fig. 8), a locally common Chatham Islands shrub mostly seen in the sand country on Rekohu / Wharekauri / Chatham Island is also native to and abundant along the coastline of eastern Australia and Tasmania. This species does however bypass the North, South and Stewart Islands of New Zealand, its only known occurrence outside Australia is the Chatham Islands (de Lange et al. 2003).

If *Zwackhia viridis* also does this, only dedicated collecting throughout New Zealand and patient hours spent behind a microscope will truly tell. For now, all we can say is that we are still adding to our knowledge of the lichen mycobiota of the Chatham Islands, and for New Zealand as a whole we have added another species, and in this case genus to the national tally of lichens.

Acknowledgements

Thanks to Dr Robert Lücking for helping guide us to the identity of *Zwackhia viridis*.

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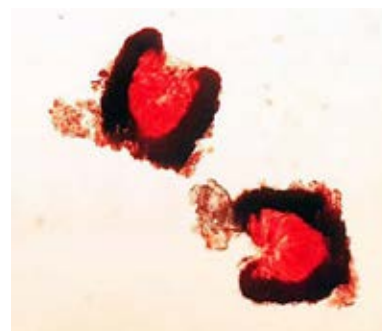


Figure 7. *Zwackhia viridis* hymenial tissue staining red following treatment with iodine. This colour reaction is one of the diagnostic chemical spot tests used to identify this species. The tissue seen here, is a cross-section of the lirellae (fruiting body) that was extracted from the specimen collected from Nikau Bush Conservation Area, Rekohu / Wharekauri / Chatham Island. Photo: A.J. Marshall.

Where the wildings are

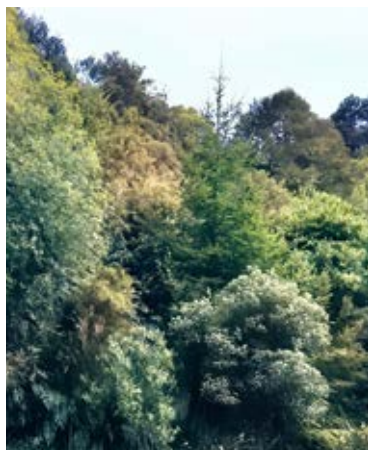
Rowan Sprague (Coordinator of the New Zealand Wilding Conifer Group and Knowledge Broker for the Winning Against Wildings research programme) (rowan@nzwildingconifergroup.org)

Wilding pines can pop up in all sorts of environments, from alpine herbfields to wetlands, cliffs to dunelands, grasslands to forests. In order to control these pesky plants, we need to know where they are.

But first, what are wilding pines? Wilding pines are pine trees which have self-established where we do not want them to grow; they are the wrong tree in the wrong place. Control of wilding pines has been going on for decades—often led by passionate ecologists and botanists keen to protect the natural environment from these invaders. Nowadays, control of wilding pines is ramping up across the country. In May this year, central Government announced \$100 million towards wilding pine control over four years. A critical aspect of control efforts is knowing where the wilding pines are.

It is important to know where wildings are for several reasons. We need to determine where the source of the invasion is and how quickly the invasion is spreading so that we can plan our control strategy for an area. We also need to figure out who manages the land affected, so that we can coordinate our control activities across property boundaries.

Knowing the locations of wildings is not only useful for control operations. Researchers can use data on the locations of wilding pines to predict the current distributions of wildings and where it is possible for them to grow. These predicted distribution maps would allow us to improve our surveillance and understanding of which areas are at risk for wilding pines establishing and growing.



A wilding Douglas fir in the Silverpeaks Scenic Reserve near Dunedin. If you see a wilding pine / wilding conifer, please take a photo and report it on iNaturalist. Photo: Rowan Sprague.

It turns out that in spite of our collective control efforts, our current distribution data is lacking. Tom Etherington, a Spatial Modeller at Manaaki Whenua – Landcare Research and a member of the Winning Against Wildings research programme, found that data records on publicly available databases were well below what he was expecting. Using the available data to predict the distribution of *Pinus radiata*, Tom found that [his model](#) was not accurately predicting *Pinus radiata* distributions. Therefore, we need more observations of wilding pines (all species) across New Zealand so that we can better predict their distribution and at-risk areas, as well as better plan our control activities.

I'll finish this article with a request: If you find a wilding pine, please take a photo and record it on [iNaturalist](#). If possible, please take as many photos as possible, particularly of the needles, bark, and cones, so that we can identify

the species. This will greatly help improve our research and management of wilding pine distributions. Join the fight against wilding pines!

Finally, the Winning Against Wildings programme and the New Zealand Wilding Conifer Group have started a webinar series with a monthly webinar about wilding pines—if you are interested in these webinars, please email webinars@nzwildingconifergroup.org to be added to the mailing list.



Wilding *Pinus contorta* near the top of Mt Fyffe, near Kaikōura. Photo: Rowan Sprague.



Rowan Sprague pulling up a wilding pine seedling. Join the fight against wilding pines! Photo: Johnathon Ridden.

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 3 September at 6.00 p.m. **Speaker:** Mike Wilcox. **Topic:** Plant life in the sea: A look at Auckland's amazing diversity of seaweeds.

Venue: Auckland Museum

Field Trip: Saturday 19 September to One Tree Hill/Cornwall Park.

Leaders: Mike Wilcox, Ben Goodwin and Shelley Heiss-Dunlop.

Waikato Botanical Society

Field Trip: Sunday 6 September to Dickeys Flat, Kaimai-Mamaku Forest Park (combined with Rotorua Botanical Society). **Meet:** 9.30 a.m. to be confirmed. **Grade:** Moderate.

Leaders: Graeme Jane and Gael Donaghy, email: gtjane@kinect.co.nz, ph. 027 570 3123.

Meeting: Monday 21 September at 6.00 p.m. **Speaker:** Lucy Roberts (DOC). **Topic:** To be advised.

Venue: The Link Centre, corner of Te Aroha Road and River Road, Hamilton East.

Rotorua Botanical Society

Field Trip: Sunday 6 September to Dickeys Flat, Kaimai-Mamaku Forest Park (combined with Waikato Botanical Society). **Meet:** 9.30 a.m. to be confirmed. **Grade:** Moderate.

Leaders: Graeme Jane and Gael Donaghy, email: gtjane@kinect.co.nz, ph. 027 570 3123.

Field Trip: Sunday 4 October to Matawai and Moanui Conservation Areas. **Meet:** 8.00 a.m. at the Opotiki i-site/DOC office. **Grade:** Moderate.

Leader: Mike Butcher, email: mikebutchernz@xtra.co.nz, ph. 027 455 5610 or 07 315 7160.

Wellington Botanical Society

Field Trip: Saturday 5 September to Kiriipiti Scientific Reserve, Old Hautere Road, Otaki. **Meet:** 10.00 a.m. at Waikanae Station north end carpark. Please check prior in case this trip is postponed/cancelled due to COVID-19 restrictions.

Leader: Mick Parsons, email parsonroad@gmail.com, ph. 027 249 9663.

Meeting: Monday 21 September at 7.30 p.m. Tony Druce Memorial Lecture "The battle to save the Raukumara Range". **Speaker:** Graeme Atkins, DOC Biodiversity Ranger, East Cape/Ruatoria.

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

Nelson Botanical Society

Field Trip: Sunday 20 September to Eight Mile Track.

Leader: Don Pittham, email pitthamd@xtra.co.nz, ph. 03 545 1985. Please contact Don for further information.

Meeting: Monday 21 September at 7.30 p.m. **Speaker:** Miles Giller (QEII Trust). **Topic:** North Canterbury covenants—treasures, trials and trivia.

Canterbury Botanical Society

Meeting: Monday 7 September at 7.30 p.m. **Speaker:** Zoe Lunniss. **Topic:** The mistletoe, *Tupeia antartica*.

Venue: Upper Riccarton Library community meeting room, 71 Main South Road, Riccarton.

Field Trip: Saturday 12 September to Lows Cutting and Awa Awa Rata Reserve. **Meet:** 8.45 a.m. to carpool. Yaldhurst Hotel carpark (on the south side of the Old West Coast Road, 100 metres past the Pound Road roundabout). **Grade:** Easy.

Contact: Alice Shanks, email alice@caverock.net.nz, ph. 027 366 1246. Please let Alice know if you intend to participate.

Botanical Society of Otago

Meeting: Wednesday 16 September at 6.00 p.m. Geoff Baylis lecture: Name changes among New Zealand ferns: the good, the bad and the ugly? **Speaker:** Leon Perrie.

Venue: Benham Seminar Room, Room 215, Second Floor, Zoology Benham Building, 346 Great King Street, Dunedin.

Field Trip: Saturday 19 September to Karitane. **Meet:** 9.00 a.m. at the Botany Department carpark.

Contact: Angela Brandt, email brandta@landcareresearch.co.nz.
