

The New Zealand Wilding Conifer Group: working with communities to boost wilding conifer control and collaboration

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It's a sunny and unusually warm September day when I visit the Craigieburn area to meet with Ray and Maree Goldring from the Waimakariri Ecological and Landscape Restoration Alliance, or WELRA (Fig. 1). I am talking with them about their recent Wilding Conifer Control Strategy as well as catching up about the work they have done over the last decade of wilding conifer control. Their ongoing dedication to wilding conifer control is an example among many of community members volunteering countless hours and effort to stop the spread of wilding conifers across New Zealand's iconic landscapes.



Figure 1. Maree and Ray Goldring tackle wilding seedlings on the flats near Flock Hill. Photo taken by Chris Macann

Wilding conifers: a major biosecurity challenge for New Zealand

We can think of biosecurity risk management as being split into areas based on different spatial and temporal scales. New species that are detected at the border are limited in impact and in the area they affect if the response is rapid and effective, although it may be ongoing if there are repeated incursions. On the other hand, once a pest has breached the border and established in the country, it can affect large areas (sometimes landscapes) where over time the response shifts from eradication to containment, to long-term management.

One such pest plant in a long-term management programme that has spread into most if not all regions of New Zealand is the wilding conifer. The term refers to a number of conifer species that have naturalised and self-established from intentionally-planted or self-seeded individuals (Ledgard 2004; Froude 2011). They are also called wildings, or wilding pines (some of which are not pines at all). In Canterbury, we are unfortunate to have several species of wilding conifers: *Pinus contorta* (lodgepole pine), *P. nigra* (Corsican pine), *P. sylvestris* (Scots pine), *P. ponderosa* (Ponderosa pine), *P. mugo* (mountain pine), *P. radiata* (radiata or Monterey pine), *Larix decidua* (European larch), and *Pseudotsuga menziesii* (Douglas fir). You can find wildings across Canterbury, although more typically in the high country (Fig. 2). They invade tussock grasslands, farmland, native shrubland, coastal banks, riverbeds, and even native beech forests. Across New Zealand, the approximate area wilding conifers affect was estimated to be about 2 million ha in 2014, more than the area of plantation forests.



Figure 2. *Pinus nigra* invading the flats below Mt Barker in Canterbury. Photo taken by author.

Both human-mediated factors, such as forestry use and amenity plantings, as well as biogeographic factors, such as climate match, have contributed to the wide distribution and success of these species (Hunter and Douglas 1984; McGregor et al. 2012). In part due to their ability to mature early, produce small seeds, and frequently having large seed crops (Richardson et al. 1994), wilding conifer species have invaded vast areas of vulnerable land in New Zealand. Where they invade at exponential rates, wildings threaten native biodiversity, cause economic losses on productive land, and reduce water yields in infested catchments (Mark and Dickinson 2008; Dickie et al. 2014; Rundel et al. 2014). They can also impact on social and cultural values.

However, all is not lost. Control of wilding conifers has been going on for decades, undertaken by the Department of Conservation, regional councils, and landholders. In 2014 the Government launched the NZ Wilding Conifer Management Strategy - 'The Right Tree in the Right Place' - to promote a national approach to the problem. As a result of the strategy, the National Wilding Conifer Control Programme started in 2016 to coordinate and manage wilding conifer control efforts and to provide co-funding from Central Government. Since 2016, over 2 million hectares of affected land in Canterbury has been searched and treated for wilding conifers under this programme (Environment Canterbury 2018), and more control is planned for 2019-2020.

The New Zealand Wilding Conifer Group

The NZ Wilding Conifer Group (NZWCG) (<https://www.wildingconifers.org.nz/research/>) formed in 2018 to address the need to have an independent stakeholder group to advise the National Wilding Conifer Control Programme as well as to connect agencies and community groups. It comprises representatives from community groups, farmers, foresters, iwi, Government agencies (MPI, DOC, LINZ, NZ Defence Force), local government and NGOs. It advocates for achieving the goals of the NZ Wilding Conifer Management Strategy and facilitates information transfer between scientific research and operational management. In 2018 the NZWCG was able to employ me as its National Coordinator on a 0.5 FTE (Full Time Equivalent) basis.

In this past year, the NZ Wilding Conifer Group has established itself as an independent legal entity, lobbied central government on behalf of the National Wilding Conifer Control Programme, and provided more support to community groups. We have talked with 20 such groups who carry out wilding conifer control and we are encouraging new groups to start up all over New Zealand where wilding conifers are a problem. While speaking with these groups, I have learned about how they operate, their aims, and challenges (Fig. 3, p. 25).

Community groups are seen as an integral part of wilding conifer management in New Zealand (Fig. 4, p. 26). They all want to care for their land and are passionate about finding solutions to wilding problems. Groups often apply for grants to undertake control and put together detailed strategies and plans for management and

post-removal restoration and revegetation. Community groups also advocate for wilding conifer control in an area, getting Government agencies and local regional councils on board and generally raising awareness in their areas. The NZ Wilding Conifer Group is working to support these existing community groups by providing advice on funding opportunities, connecting groups to the National Programme and ensuring they have a voice in management decisions, and to help new groups form.

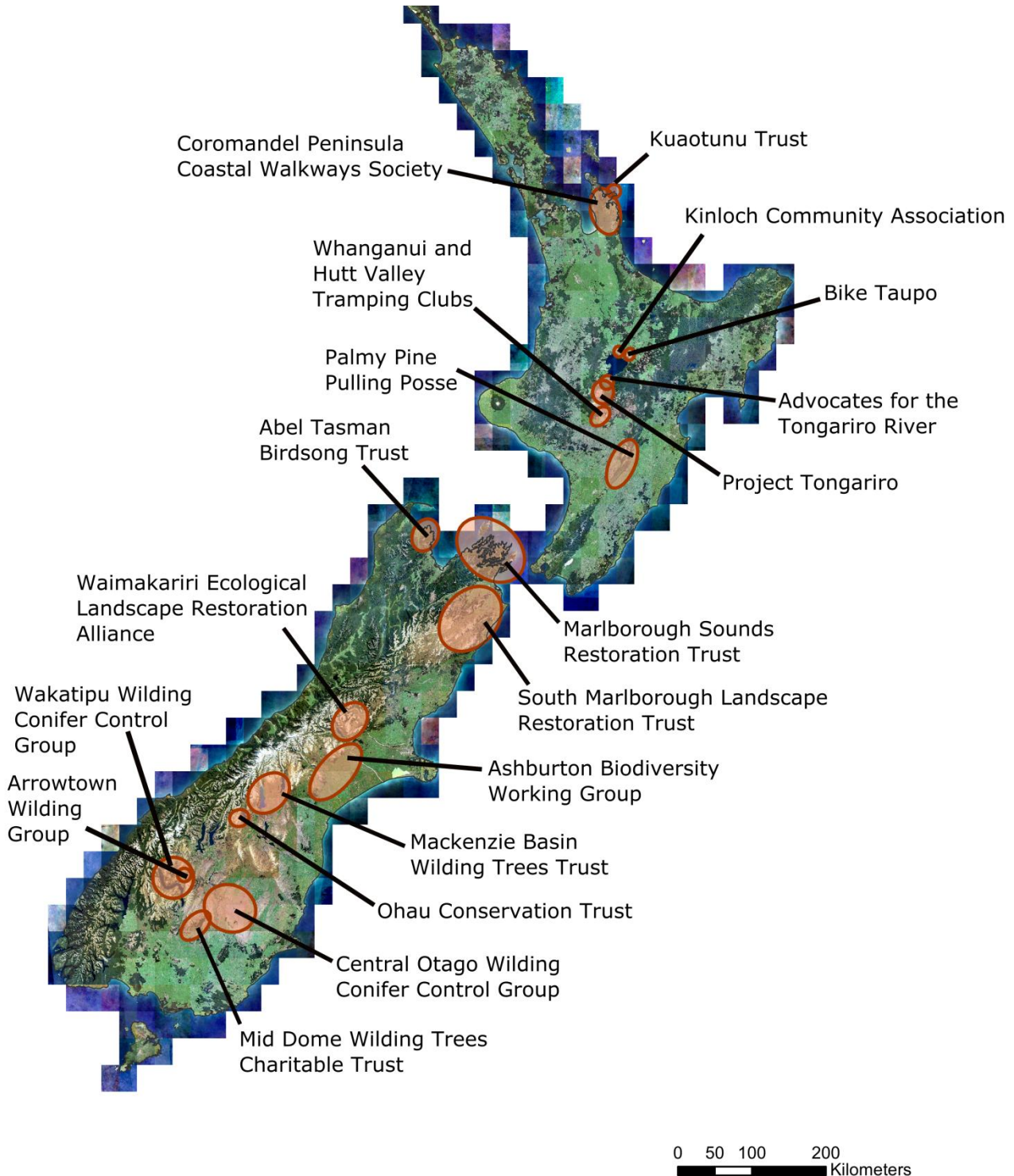


Figure 3. Locations of community groups involved in wilding conifer control and contacted by the NZWCG



Figure 4. The Whanganui and Hutt Valley Tramping Clubs pause for a group photo during their annual pine pulling weekend on the slopes of Mt Ruapehu. Photo taken by author.

Creating a bridge between science and management

Along with our work connecting with and mobilising communities, we also aim to link science and management. The Winning Against Wildings programme, funded by the Ministry of Business, Innovation, and Employment, is a research programme focused on wildings research aimed to assist management. I am working closely with researchers to update the wilding conifers website. I am also working to increase the visibility of current research and trying to strengthen the relationship and communication with operations managers.

The NZ Wilding Conifer Group is also seeking to act as a link between the National Wilding Conifer Control Programme and the Winning Against Wildings programme. The research projects can feed into different aspects of the National Programme, from increasing the efficacy of herbicides used and advising on where to survey for new wildings, to quantifying the impacts and legacies of wilding invasions and preventing future invasions. Additionally, as a community-based stakeholder group representing a wide range of organisations, the NZ Wilding Conifer Group is uniquely placed to advise these research projects and provide end-user feedback.

Wilding Free 2050?

We have no doubt heard about Predator Free 2050, but what about Wilding Free 2050? Is that goal even possible? There is a lot of work to do if we want to rid our

environment of wildings. While some success in wilding conifer control has been achieved to date, many areas are still affected. Additionally, the wilding conifer issue is complicated by the potential spread from plantation forests, with more forests predicted to be planted through the One Billion Trees Initiative and pressure from the plantation forests sector. Along with this, limited funding has hindered our ability to control wildings in all areas. The recent investment from the central government of \$21 million over two years in this year's budget is not nearly enough to tackle this massive issue.

However, the commitment of community groups and the ability of many agencies to band together against the spread of wildings inspires me and gives me hope. Furthermore, the seed bank of exotic conifers is short-lived (approximately five years or less), and we know how effectively to kill these trees. The NZ Wilding Conifer Management Strategy proposes a reasonable stepping stone to Wilding Free 2050 by preventing the spread of wilding conifers and containing established conifer areas by 2030. Continuing on from there, if we all work together (and with more funding!), we can become Wilding Free by 2050 with appropriate measures in place to prevent any future spread from plantation forests.

Want to learn more or join a community group? Please get in touch with Rowan Sprague at rowan@nzwildingconifergroup.org.

References

- Dickie IA, St John MG, Yeates GW, Morse CW, Bonner KI, Orwin K, Peltzer DA. 2014. Belowground legacies of *Pinus contorta* invasion and removal result in multiple mechanisms of invasional meltdown. *AoB Plants* 6: 1–15. <https://doi.org/10.1093/aobpla/plu056>
- Environment Canterbury. 2018 (1 Jul). Controlling wilding pines. <https://ecan.govt.nz/reporting-back/controlling-wilding-pines/>
- Froude VA. 2011. Wilding conifers in New Zealand: status report. Bay of Islands. <https://www.wildingconifers.org.nz/research/published-research/>
- Hunter GG, Douglas MH. 1984. Spread of exotic conifers on South Island rangelands. *New Zealand Journal of Forestry* 29(1): 78–96.
- Ledgard NJ. 2004. Wilding conifers – New Zealand history and research background. In: Hill RL, Zydenbos SM, Bezar CM, editors. *Managing wilding conifers in New Zealand: present and future*. Proceedings of a workshop held in conjunction with the annual conference of the New Zealand Plant Protection Society, Chateau on the Park, Christchurch, August 2003. Christchurch: New Zealand Plant Protection Society; p. 1–25.
- Mark AF, Dickinson KJM. 2008. Maximising water yields with indigenous non-forest vegetation: a New Zealand perspective. *Frontiers in Ecology and the Environment* 6(1): 25–34.

- McGregor KF, Watt MS, Hulme PE, Duncan RP. 2012. What determines pine naturalization: species traits, climate suitability or forestry use? *Diversity and Distributions* 18(10): 1013–1023. <https://doi.org/10.1111/j.1472-4642.2012.00942.x>
- Richardson DM, Williams PA, Hobbs RJ. 1994. Pine invasions in the Southern Hemisphere: determinants of spread and invadability. *Journal of Biogeography* 21(5): 511–527. <https://doi.org/10.2307/2845655>
- Rundel PW, Dickie IA, Richardson DM. 2014. Tree invasions into treeless areas: mechanisms and ecosystem processes. *Biological Invasions* 16(3): 663–675. <https://doi.org/10.1007/s10530-013-0614-9>
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The growing role of botanic gardens to mitigate the impact of Invasive Alien Species

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Preamble

New Zealand faces immense, insidious and often irreversible economic, environmental and social impacts from Invasive Alien Species (IAS), including pests, diseases and weeds, to our valued productive and natural plant systems. Because of New Zealand's economic reliance on primary production, and our unique flora and fauna, this country is especially vulnerable to IAS. New Zealand's defence from IAS (i.e. border biosecurity) has been the top priority for our productive sector for the last nine years (KPMG 2019) and is a concern of many New Zealanders. Additionally, Biosecurity 2025 Strategic Direction 1 (1 of 5) "A Biosecurity Team of 4.7 Million" aims to make all New Zealanders aware of the importance of biosecurity and to get them involved in pest and disease management (MPI 2018). The goal of the Canterbury Botanical Society is "to promote interest in the study of botany, especially that of New Zealand, and in the preservation of plants and habitats, and to disseminate current scientific information specific to New Zealand botany". It is therefore within the stated concern, interest and capability of its members to become part of the solution to mitigate the impact of IAS to New Zealand's valued plants, species and systems. This article illustrates three areas where the New Zealand botanic community, and specifically botanical gardens, can make a difference to