

ANTICIPATING AOTEAROA'S WEEDY FUTURES

Identifying future weed research and management needs

IMAGINING THE FUTURE

It's 2050. Land management is changing, driven by land managers, different goals and needs, new weather extremes, and shifting species on the landscape. What do these changes mean for how we manage weeds, and what research is needed to prepare us for that future?

BACKGROUND

Our biosecurity system is currently buckling under its weed burden, both 'legacy weeds' which we've known about for decades, and new weeds which are only just starting to spread. Biosecurity managers struggle to prioritise which weeds and sites to manage due to a lack of resourcing and information about new weed species and how to control them.

We also know that change is coming. How we manage land and weeds in the future will be different to the way we do it now. While we can't see the future, we can anticipate some of these changes and do the research needed to better anticipate, prepare, and be ready to respond when change comes.

RESEARCH

To brainstorm what Aotearoa New Zealand might look like in 30 years, we ran a scenario-building exercise. We gathered researchers, policymakers, and practitioners who think deeply about land management and use, socio-economics, and the rights of indigenous people to develop four scenarios for 2050 that could impact conservation management, including for weeds (Fig. 1).

We explored management opportunities and challenges under each of these scenarios, in a series of online workshops with weed practitioners who operate at national to local scales. We shared these thoughts with researchers studying invasive weeds to help us identify research directions that would best support future management needs, both across and within scenarios.



AT A GLANCE

Our biosecurity system is currently buckling under the burden of 'legacy weeds' - not to mention the threat of new weeds.

While we can't see the future, we can anticipate some of these changes, and do the research needed to better anticipate, prepare, and be ready to respond when change comes.



Four future scenarios impacting conservation management

Scenario 1 Māori Land Tenure:

As a result of treaty settlements and changes in governance structure, Māori communities manage large tracts of land and Māori voices are consistently represented in land management decision-making locally and nationally.

Scenario 3 Predator Eradication:

Rats, possums, and mustelids are heavily suppressed or functionally eliminated nationwide following the largely successful Predator Free 2050, with some increase in control of other invasive mammals as well.

Scenario 2 Native Afforestation

Native production forest replaces the use of non-native (exotic) trees for commercial harvest and native permanent forest is created through reforestation of marginal lands for ecosystem services including carbon sequestration.

Scenario 4 Increasing Extreme Events:

Climate change results in increasing frequency, scale, and intensity of extreme weather events, including fires, storms, and flooding, with significant impacts on infrastructure, funding policies, and the persistence of native biodiversity.

Figure 1: Four future scenarios for Aotearoa New Zealand that could impact conservation management.

Researchers identified three common research directions needed across the scenarios:

- Forecast weed expansion or range shifts using climate projections and present-day environmental preferences of weed species
- Explore how understanding plant traits could be used to improve early detection and predict the distribution of novel species under changing environmental conditions
- Improve weed distribution models by factoring in landscape variability, such as connectivity between forest patches and configuration of management across the landscape

Practitioners identified four common management needs across the scenarios:

- Improved information sharing between organisations, communities, and hapū
- Better coordination and collaboration between agencies in the biosecurity system (including Regional Councils, DOC, and MPI)
- Long-term and consistent funding for weed management
- More tools for behavioural change to motivate more weed control

NEXT STEPS

What is obvious from this work is that Aotearoa New Zealand is poised to have a far weedier future without tackling invasions earlier and linking research to practice quickly and effectively.

This scenario-building exercise illustrates a way to better prioritise the research we do now so it can meet future needs. We have shown that several research directions have value now to enable weed managers to respond to future challenges.

The scenarios and weed research priorities will be published as open-access papers later this year.

Please contact Rowan Sprague if you would like to receive the final articles and links to the scenario descriptions, or if you have feedback for us.

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We hope the scenarios, and scenario-building method described, will be useful for developing future-focused research and management priorities in a variety of contexts.

