



Space invaders:

A review of how New Zealand manages weeds that threaten native ecosystems

Frequently asked questions

What is this report about?

New Zealand's native ecosystems face a growing weed problem. This report examines how exotic plants already in Aotearoa New Zealand harm our native ecosystems, and reviews whether the system we have for managing these native ecosystem weeds is fit for purpose. The investigation found that the system could be improved and that it is currently hampered by inadequate leadership, limited information and haphazard and uncoordinated actions. Some of New Zealand's unique native ecosystems are at risk from a green occupation of weeds.

What is a native ecosystem weed?

The focus of the Commissioner's report is on exotic plant species that threaten New Zealand's native ecosystems, often simply referred to as 'weeds'. A weed is a plant growing where it is not wanted. But whether someone labels a plant as a weed or not depends on where it grows and the various social, economic and environmental benefits or risks it represents. As a result, people's perspectives on how to manage the same plant species can often be in conflict. One person's treasure can be another person's nuisance.

Russell lupins, for example, are valued by many for their colourful flowers that produce picture-postcard landscapes. To some farmers, their ability to fix nitrogen from the atmosphere makes them valuable pasture plants that provide nourishment for the soil without needing to apply fertilisers. And yet, lupins are also native ecosystem weeds that can spread rapidly, forming dense stands in the gravel beds of braided riverbeds, creating problems for the native species that live there and fundamentally altering river processes.

How big is this weed problem?

A large and growing one. Over 25,000 exotic plants have been introduced to New Zealand. About 1,800 of these are considered naturalised (able to live in the wild without human assistance). For comparison, we have about 2,300 plants native to New Zealand, and only 31 introduced land mammals have been able to survive and thrive in the wild.

Problems can arise when introduced exotic plants escape from where they've been planted and spread uncontrolled across the landscape – with unintended impacts in new settings. The pool of potential garden escapees is vast and, at current rates, around 20 exotic plants establish in the wild every year.

These plants spread in various ways. Seed may be dispersed far and wide by birds or the wind, and our actions can also move plants around, such as the dumping of garden waste, tramping and moving materials or equipment. The problem is likely to get worse as climate change and ongoing land use change create more opportunities for weeds to move to and thrive in new places.

How much damage can weeds do to native ecosystems?

Weeds can harm native ecosystems in many ways. The severity depends on the type of weed and the native ecosystem it is invading.

In some cases, the impact is dramatic and obvious – such as when vines like banana passionfruit or old man’s beard smother native bush, killing native plants below and even sometimes causing the entire canopy to collapse. Aquatic weeds like hornwort can choke lakes and rivers. Lodgepole pine can convert mountain grasslands and herb fields into forests because it can grow at higher elevations than native trees do.

Some impacts are less visible but still serious – for example, wilding conifers prevent native plants from growing by changing the soil chemistry and, together with gorse, make ecosystems more vulnerable to fire, thanks to highly flammable foliage and wood. Weeds can also prevent bush from regenerating – particularly those like wandering willie or ginger that can carpet the forest floor in a dense mat.

The invasion of native ecosystems is helped by how easily many weeds can grow and thrive in the open habitats that dominate much of our landscapes. As well as simply outcompeting native plants, many exotic plants also thrive and spread in disturbed areas of bare earth – scars on the landscape caused by fire, floods, erosion or excavation.

Why did the Commissioner decide to undertake this investigation?

Mammalian predators have captured national concern, riding a wave of predator-free initiatives around the country. No such call to arms exists on the weeds front. Despite some weeds being of concern for over 150 years, the entire system for managing exotic weeds in New Zealand appears to have never been reviewed. The historical focus on weeds that affect production land (such as farmland and plantation forests) begs the question of whether current legislation gives due regard to the risks that weeds pose to our native ecosystems.

What did the report find?

There are 25,000 exotic plant species already in New Zealand and hundreds of these are actively causing harm to our native ecosystems. But there is no comprehensive, up-to-date record of all the exotic plant species in New Zealand, including where they are and how they are managed (if at all).

Exotic plants are mostly managed under New Zealand’s biosecurity system. However, weeds that impact on our native ecosystems tend to be a lower priority compared with other biosecurity threats like plant or animal diseases, animal pests, or weeds that affect our productive land. While all these threats are important, focus on them often means native ecosystem weeds drop off the agenda.

Currently, not enough is being done to prevent exotic plants from escaping into the wild or to adequately address the risks from the plants that have already escaped. Surveillance is patchy and reports from the front line often depend as much on luck as systematic surveillance.

What has the Commissioner recommended?

The Commissioner recommends making several improvements to the biosecurity system to ensure New Zealand's native ecosystems and species are better protected from weeds. These adjustments will improve leadership and coordination, clarify desired outcomes and help align national, regional and local efforts. These changes will allow for better guidance about which plants to manage, where and how they are to be managed and by whom, ensuring scarce resources are deployed wisely.

In the meantime, existing weed information systems should be improved to provide everyone managing weeds with a single authoritative and publicly accessible database of all exotic plants in New Zealand. The Commissioner also recommends improving monitoring and surveillance of emerging weeds and establishing an expert team to scan for emerging risks from new exotic plants that may be tomorrow's weeds.

Surely our biosecurity system is already managing weeds in New Zealand?

In theory, yes. But the biosecurity system is very broad, covering pre-border requirements, border measures and management within our borders. The system aims to defend New Zealand from unwanted intrusions by harmful organisms that range from four-legged animals to invisible pathogens to plants. In trying to do it all, some aspects get less attention than others.

The Ministry for Primary Industries, which is in charge of New Zealand's biosecurity system, devotes most of its efforts to defending the border. But for the exotic plants that have already made it into the country, the ministry largely leaves management to others, including the Department of Conservation, regional councils and landowners. The Ministry for Primary Industries only provides limited oversight and coordination. Weeds are growing through the gaps.

Aren't we already protecting our native ecosystems from weeds on conservation land?

Weeds don't respect property boundaries. Status as a wildlife area, reserve or even national park does not guarantee protection from a weed invasion. And conservation land does not cover all valuable native ecosystems – many are on private land.

While the Department of Conservation has a leadership role in protecting native biodiversity and has developed several weed-related initiatives in the past, it is not clear how many weeds, if any, are still managed under these initiatives. Its focus appears to be elsewhere, currently spending three times more on controlling animal pests than weeds. In any case, the Department of Conservation cannot manage weeds beyond the land it administers and lacks the resources to adequately manage even that.

What is being done regionally to protect our native ecosystems from weeds?

Regional councils have valuable expertise in dealing with exotic plants and provide significant local leadership. But they are largely left to manage as best they can and often end up dealing with the same weeds in different ways.

Regional councils collectively aim to manage 334 groups of plants. However, these plants are managed for a variety of reasons and often reflect public and local political pressures, rather than the weeds that pose the greatest risks to native ecosystems or those that cause the greatest harm. Time and money being spent arguing over what weeds to manage, and how, could be saved if clear national priorities were communicated, roles specified and resources prioritised.

Sometimes weeding feels like constant gardening. Will it ever stop?

In many cases, no: we will need to keep weeding some plants for a long time to protect the native ecosystems we value. Weeds are often extremely resilient and opportunistic. As long as there is a nearby source of seeds or plant fragments that will regrow, there is a constant threat of reinvasion.

We will never get rid of all the weeds in New Zealand. There are simply too many. But we can be smarter about how we tackle them and we can drastically slow their spread if we act early enough. Most importantly, we need to have clear outcomes in mind and be ready to commit over the long term.

If we can't get rid of them all, which weeds should we be managing?

Any process to prioritise which weeds to tackle needs to be based on the risk each weed poses to native ecosystems. This includes how likely a weed is to invade a given location, the degree of harm it can cause to ecosystems once there and what the potential for further spread is. Most of these are determined by the physical attributes of the plant – such as how the plant reproduces and how it can be dispersed. These risks are also influenced by how long a plant has been living and reproducing in the wild and how widespread it is.

How easy it is to remove a weed and what will happen once it has been removed must also be considered. Removing weeds can create 'weed-shaped holes', where, without deliberate actions, an empty space can become fertile ground for other weeds to move in – particularly if there are infestations nearby. These attributes can help guide what the desired outcome of removing a plant is – such as removing fruit to prevent seeding, protecting a specific site, or controlling a plant in an entire area. Any weed management programmes need to choose achievable goals that are sustainable over time. Managing weeds across landscapes, properties and regional boundaries should also be considered.

Isn't some weed cover better than bare ground?

In te ao Māori, the dichotomy of native plants good/exotic plants bad is not always so sharp. What is more important is whether the plant is negatively impacting the mauri or life force of a place. Protecting Papatūānuku is paramount and bare ground is considered a scar on her body that needs to be clothed and protected. In this world view, any green covering is better than no green blanket at all. Such a blanket can help with erosion issues and freshwater quality, though sometimes these plants can exacerbate fire risk and cause other problems.

Weeds can also be viewed in te ao Māori as plants that disrupt the natural balance that Papatūānuku needs to be well. Therefore, the way a plant relates to other species becomes the key issue. If an exotic plant interferes with another species in a major way, this can weaken the mauri of the place, and the integrity of the whole ecosystem suffers.