



Manaaki Whenua  
Landcare Research

Aotearoa's unique biodiversity and primary production is constantly threatened by invasive animals, plants, and diseases.

It's vital that New Zealand has effective biosecurity measures in place, backed up by state-of-the-art science.

Our researchers look for new ways to control these pests and work to develop innovative tools and strategies that community groups and land managers can use to deliver improved conservation and production outcomes.

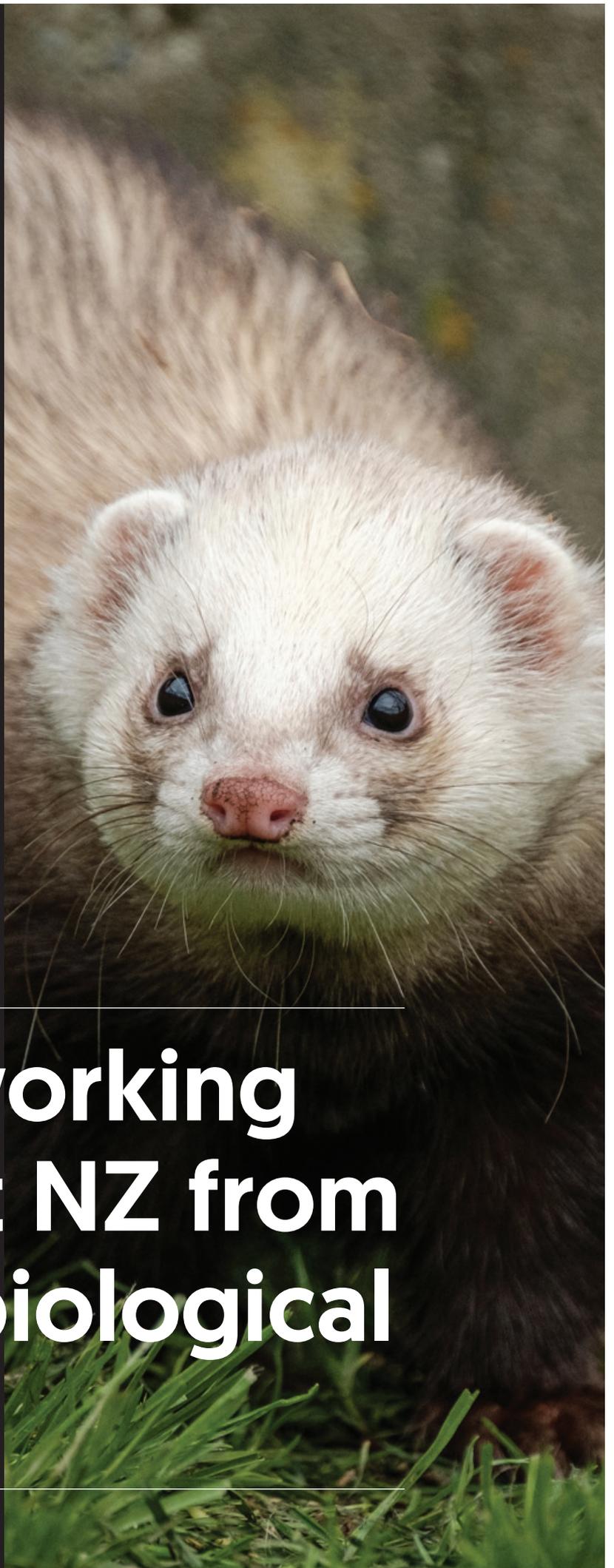
They are successfully carrying out critical biosecurity research for New Zealand that contributes towards the goal of a predator-free New Zealand as well as many other conservation and production management goals.

Turn over to read about some of our latest biosecurity research projects.

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# Science working to protect NZ from invasive biological threats

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## Landscape Predator control - A novel rat-specific toxin

A novel toxin targeting rats has been identified by researchers and is now being tested in field trials.

Over the past decade, Manaaki Whenua–Landcare Research’s Brian Hopkins and his colleagues have been developing and testing species-selective toxins. They have identified a toxin that has an active component specific to *Rattus* species and is highly effective at killing Norway rats (*Rattus norvegicus*), and also effective at killing ship rats (*Rattus rattus*).

Hopkins’s team is now working to adapt the bait formulation to be as effective in ship rats as it is in Norway rats, so that both species can be targeted using one bait product.

The early results from the trials have been very promising, and researchers believe this toxin has the potential to help New Zealand achieve predator freedom.



## A super lure for stoats

A non-toxic, natural lure for stoat control has been developed by Manaaki Whenua and is getting great results among conservation groups.

During his PhD research project, MWLR scientist Patrick Garvey discovered that the scent of larger predators (e.g. feral cats or ferrets) is a powerful attractant for smaller predators such as stoats. Four conservation groups are using ferret scent as a lure and are already seeing a large increase in their stoat captures.

Following on from this, Garvey started a research project to synthesise a “super lure” for stoats and weasels to create a synthetic lure that performs as well or better than the natural scent. The super lure will be field-tested in spring 2019.

A synthetic super lure could have a huge impact on the effectiveness of stoat and predator control in New Zealand and help to reach the Predator Free NZ goal.



## The race against myrtle rust – mass seed collection and screening underway

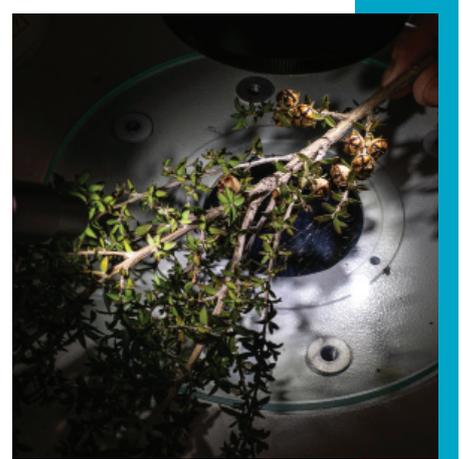
Many of New Zealand’s best-known native trees – pōhutukawa, rātā, mānuka – are in the Myrtaceae family (myrtles). They urgently need protection from the exotic fungal disease myrtle rust (MR) which can cause total tree death and can severely affect Myrtaceae-dominated ecosystems.

The causal agent, the wind-dispersed fungus *Austropuccinia psidii*, arrived in New Zealand from Australia in 2017, following a sustained global spread during the past 40 years.

In response to this threat, mānuka and kanuka seeds from across New Zealand are being tested for their resistance to the deadly fungus myrtle rust.

In a project involving MPI and Plant & Food Research, Manaaki Whenua researchers have collected seed over the past year and sent it to a screening facility in Australia where the seeds are being challenged with myrtle rust to test the resistance of each species to the devastating pathogen.

Myrtle rust also poses a risk for traditional Māori food harvesting activities. As part of the project, researchers have been working closely with Māori landowners to source and access seed samples from their land and from DOC estate.



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