# Myrtle Rust Update

July 2018

## Welcome to our new format newsletter!

In this monthly update you will find:

- Myrtle rust detections over the last month from the Ministry for Primary Industries
- New advice for planting and restoration programmes
- Seed collection update from the Department of Conservation
- Overview of the last year's work on Raoul Island from the Department of Conservation
- A research report on the risks of transmission of myrtle rust spores by honey bees which has recently been completed
- Science Spotlight
- Symptoms to look out for on myrtle plants
- Links to further information

---

## Detections in the last month

The number of new finds detected by the Ministry for Primary Industries since 30 May 2018 brings the total number of infected properties to **760**.

### New finds since last update by town/city/suburb – 19 new sites:

- **Auckland:** Manurewa (1), Albany (1) New Lynn (1), and Avondale (1)
- **Waikato:** Kuratau (5), and Acacia Bay (3)
- **Taranaki:** Waiwhakaiho (1)
- **Tasman:** Pohara (1), Collingwood (2), Patrons Rock (2), and Tata Beach (1)
- **Marlborough:** Blenheim (1)

### Property type:

Private (612), public land (66), commercial (43), school (14), nursery (13), public conservation land (4), retailer (2), golf course (2), orchard (2), depot (1), cemetery (1).

### Susceptible plants

Plants found to be most susceptible thus far to myrtle rust in New Zealand are Ramarama, Pōhutukawa, Rata, Monkey apple and Bottle brush.

### MPI surveillance findings

| Host | Total Surveyed | Confirmed |
|---|---|---|
| **Ramarama:** *Lophomyrtus* spp. | 11,944 | 653 |
| **Pōhutukawa, Northern rata, Southern rata:** *Metrosideros* spp. | 40,163 | 409 |
| **Monkey apple:** *Syzygium* spp. | 9,561 | 158 |
| **Bottle brush:** *Callistemon* spp. | 9,979 | 21 |
| **Willow myrtle:** *Agonis flexuosa* | 447 | 7 |
| **Feijoa:** *Acca* spp. | 16,410 | 5 |
| **Mānuka:** *Leptospermum scoparium* | 17,511 | 3 |
| **Chilean Guava:** *Ugni molinae* | 1,164 | 2 |
| **Gum:** *Eucalyptus* spp. | 6,321 | 1 |
| **Australian Tea Tree:** *Thryptomene* spp. | 73 | 1 |
| **Australian Water Gum:** *Tristaniopsis* spp. | 303 | 1 |
| **Other** | 15,289 | 0 |
| **Total:** | **129,165** | **1,260** |

## New consolidated advice for planting and restoration programmes

If you are planning large-scale planting and restoration programmes using myrtle plants, follow the advice in the "Managing native plants susceptible to myrtle rust: Guide for large-scale planting and restoration programmes".

This guide was developed collaboratively with the Department of Conservation, Ministry for Primary Industries and Council representatives.

**Download the guide for large-scale planting & restoration programmes here**

---

# Seed collection update

After the discovery of myrtle rust on mainland New Zealand in May 2017, a biosecurity response was initiated and led by the Ministry for Primary Industries (MPI). At that time, the Department of Conservation (DOC) initiated the task of urgently task of collecting seed or other germplasm from all native Myrtaceae as an insurance policy against the potential impacts of myrtle rust.

The first round of seed collection was undertaken in May-July 2017, and then was extended to covering the North Island and northern South Island. This year's seed collection activity is nationwide and started in January, collecting early ripening seeds and filling the gaps from last year's collections.

In late 2017, the Department of Conservation developed a seed collection framework to collect enough seed to adequately cover the genetic diversity within each of the 36 native myrtle species nationwide. This involved using myrtle species distribution data and records to divide New Zealand into 49 ecological 'sub-regions'. A total of 385 collections are planned to provide a good geographic spread (including social and political benefits) and to maximise the opportunities for collecting a full range of genotypes for each myrtle species. This work has been developed using the revised threat statuses for the myrtle family. These were upgraded following the discovery of Myrtle Rust in New Zealand but are yet to be published.

Gaining permission from local iwi to undertake seed collection in any area has been fundamental to this year's programme of work. Once permission is granted seed is collected in the field by DOC staff and sent to the physical seed bank at the Margot Forde Forage Germplasm Centre at AgResearch. This seed bank is staffed and coordinated by Massey University.  A set of voucher specimens (from plants seed is collected from) is also collected, then prepared and stored at the Dame Ella Campbell Herbarium and two other NZ herbaria.

**Progress to date**

- Over 70 people were formally trained in seed collection techniques over Summer 2017/18. This included approximately 25 iwi representatives, five Botanical Gardens Association of NZ (BGANZ) staff, 41 DOC staff and six regional council staff
- So far we have 28 of the 36 bankable Myrtaceae safe in the bank
- 211 out of 390 (55%) planned collections have been complete to date
- Discussion is ongoing with iwi in some areas to have seed collected and stored locally. Ngati Kuri have been in contact directly with the seed bank regarding this
- Field teams have recently been told to maximise the collection of *Lophomyrtus bullata* (Ramarama), due to its high susceptibility to Myrtle Rust and other pathogens
- Due to the high level of infestation in some areas, some species have not been collected within those areas

---

# Myrtle rust work on Raoul Island

The Department of Conservation recently wrote a summary of their work on Raoul Island detailing what they have learnt over the last year.

Short-term monitoring (monthly assessments) has provided data on the speed of transfer and how the leaves, buds and fruit are contaminated on Raoul Island pōhutukawa. Medium-term monitoring (annual or bi-annual assessments) has helped to understand the impact of myrtle rust on the foliage of mature plants, and also the rate of regeneration.

**Read the full write up of what DOC have learnt from Raoul Island here**

---

# Research on the risks of transmission of myrtle rust spores by honey bees completed

Plant & Food Research completed an assessment of myrtle rust spore transmission risk via bees and beehives. The research shows that myrtle rust spores can survive for up to 9 days within beehives, but more research needs to be done to understand:

- The prevalence and consequences of honey bee behaviour around myrtle rust fungal outbreaks;
- Any impacts on honey quality and production;
- Any potential impacts to bee or hive health due to bees collecting pollen contaminated with bacterial plant-pathogens or the fungal rust spores.

The research does not provide enough evidence to justify widespread restrictions on the movement of beehives, which would have significant financial implications for beekeepers, the honey industry and primary industries that rely on bee pollination, but individual landowners have a choice to restrict movements if they see fit. DOC is urgently reviewing its policy in regards to the location and placement of beehives based on this research. DOC will consult with concessionaires, Treaty partners and the industry before making any changes in this area.

**You can read the full report here**

# Science Spotlight - Scion Research Projects

Scion Research is working on several projects centered around different themes.

## Project # 1

**Building engagement and social licence:**

- Review of existing knowledge
- Co-inquiry process engaging stakeholders & communities (surveys and focus group meetings)
- Learning case studies to ascertain i) risk perception ii) key networks and groups for targeted engagement iii) relative impact and management options in different areas

**Te Ao Maori**

- Develop a greater understanding of the implications of myrtle rust (post border and long-term) on and for Te Ao Maori; What is the impact of the disease on local taonga?
- Support Maori to develop their own myrtle rust management plans for each rohe
- The identification of specific-Matauranga tools, Maori led solutions and practices for eradication and or managing myrtle rust

**Improving management tool & approaches**

- Improved myrtle rust surveillance
- Mapping Myrtaceae distributions
- Pilot trials of management tools

- Scoping a resistance breeding programme

**Evaluation of impacts and responses**

- Development of indicators for environmental, economic and socio-cultural systems to evaluate consequences of myrtle rust in New Zealand
- Scope potential environmental and economic consequences of myrtle rust in New Zealand using a modelling framework

## Project # 2

**Understanding the pathogen, hosts, and environmental influences**

- Testing of native and important exotic host species susceptibility against the pandemic *Austropuccinia psidii* strain in Australia (Queensland)
- Risk assessment of New Zealand Myrtaceae against other *A. psidii* strains (testing in Uraguay and South Africa)
- Epidemiology of myrtle rust in New Zealand conditions
- Identification of genetic markers linked to resistance
- Determine the role of New Zealand Mrytaceae endophyte communities against myrtle rust

***Austropuccinia psidii* genome sequencing**

- Sequencing and analysing the genome to reveal potential mechanisms of pathogenicity that can be targeted by breeding or other responses
- To determine the differences between different strains of *A. psidii*

**Improving management tools and approaches**

- Investigating alternative methods to storage of seed or germplasm for conservation of high risk species and to ensure future access to genetic variation

Research outputs are expected quarterly and we will ensure the findings are shared with you via this newsletter.

## Meet a researcher

*Simon Wegner is a social scientist, who will be working on the themes building engagement and social licence, and evaluation of impacts and responses.*

Simon has a background in social psychology, public engagement, science communication and human behaviour. He was most recently with the Ministry for the Environment where he spent two years working on freshwater policy implementation and behaviour change. Before that, he completed a MSc in Environmental Management at the University of Auckland, funded by

Auckland Council, that investigated how forest visitors respond to kauri dieback and what influences whether they comply with the recommended biosecurity control measures. In particular, his work has focused on how people's identities and activities influence their perceptions of scientific evidence. While there, he also taught science communication and science policy.

---

## Symptoms to look out for on myrtle plants


Bright yellow powdery eruptions first appear on the underside of the young leaf


As the infection progresses bright yellow powdery eruptions of spores appear on both sides of the leaf


Overtime the damaged leaf darkens and become brown and dark grey rust pustules


Some leaves may become buckled or twisted and die off

Myrtle rust prefers relatively high humidity and warm temperatures to produce spores from spring to autumn, while plants are actively putting on new growth.

---

# Find out more

**About myrtle rust:**

**Biosecurity New Zealand myrtle rust page**

**DOC myrtle rust page**

**Myrtle rust fact sheet**

**Read more about myrtle rust**

---

**Video on Youtube featuring ‘Bug Man’ Rudd Kleinpaste:**

---

Biosecurity New Zealand
Ministry for Primary Industries
Manatū Ahu Matua

Department of Conservation
Te Papa Atawhai

This information is compiled by the Ministry for Primary Industries (MPI) and the Department of Conservation (DOC).

For information about this update, contact MyrtlerustNZ@mpi.govt.nz

Subscribe

Forward

Ministry for Primary Industries
PO Box 25256, Wellington, New Zealand