



# Managing ex situ plants highly susceptible to pathogens

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- Establishing ex situ collections is a first step in plant conservation.
- Receiving material, as an ex situ provider, of a plant highly susceptible to a pathogen, can be complicated. The provider needs to ensure:
  - proper care of the affected germplasm by working out a care regime, ensuring resourcing & assessing risks
  - talks with all stakeholders
  - approval by managers & acceptance by staff
  - protection of existing plants, collections and projects at the facility and disposal options if required.
- The facility may also need to consider the opportunity costs of taking on the species. They (a BGANZ garden) may also be able to broker a better or additional ex situ provider.



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Rāta Moehau *Metrosideros  
bartlettii*

- ABG received 5 genotypes of Rāta Moehau, of the 12 plants left in the wild, out of the blue with 4 hours notice.
- A few years later – myrtle rust arrived in NZ
- New approach needed:
  - Trials of suitable fungicides
  - Preventative fungicide regime started
  - Hand-watering (cf automated overhead) to reduce conditions suitable for rust
  - Separate housing, away from main stand out area, used as physical barrier to inoculum to keep plants clean
  - Duplicated collection to facility outside (at least for now) current range of rust.

Finally – importance of keeping material clean (using fungicides), and having a vigilant survey regime to detect infection, to be confident clean material is returned to the wild.





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## Lessons learned:

- Ensure the skills/tools/resource available to look after a threatened plant with a disease/or likely to get it e.g.
  - Staff are qualified to use fungicides (& at a facility that does not, as a general rule, use pesticides or fungicides)
  - Bespoke watering regime
- Weigh up the costs of ongoing management (poss indefinitely) including time (treatment, monitoring) & space (separated from other collections)
- Covid – be prepared for the unexpected! The manual watering was a burden during covid lockdown as no staff were allowed on site to water.



*Metrosideros bartlettii*



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*Lophomyrtus* spp. & cvs

- Prior to arrival of myrtle rust (MR), ABG established a seed orchard of wild collected *Lophomyrtus*\* spp & cultivars (including natural hybrids), as the genus was expected to be the most likely to be highly affected.
- It was still in the nursery (prior to planting out) when MR arrived in the country
- The seed orchard was one of the first victims of MR at ABG
- The NZ Plant Pass nursery hygiene scheme focusses on nursery hygiene - and harbouring infected plants runs contrary to this approach.

\**Lophomyrtus bullata* & *L. obcordata*



We quickly assessed they infection would put other crops & collections at risk  
The orchards existence disaffected other stakeholders e.g. land managers where  
these revegetation were to be planted







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*Lophomyrtus* spp. & cvs

- Not ideal to have infected plants in the nursery with other Myrtaceae plants e.g. for revegetation and eventual planting at wild locations, or threatened spp e.g Rāta Moehau
- But it was a valuable collection of genes & some cvs were not infected
- Wanted to deaccession, but they are valuable
- Organised the transfer to an offsite research collection managed by a plant pathologist undertaking research into MR resistance.

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## **Field susceptibility of horticultural selections of *Lophomyrtus* species and hybrids to myrtle rust (*Austropuccinia psidii*)**

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- Talk to the ex situ provider as early as possible so they can talk to staff, managers & stakeholders about implications of the acquisition.
- Make a plan for how you will safely care for the collection, & minimise risk of infection and spread within the facility.
- Decide ahead of time what happens if the material becomes infected
  - to avoid disposing of genetic material which may be on the verge of extinction
  - & which might be valuable to someone else e.g. a researcher in an approved facility. [Check you can move material legally and that the recipient can hold it legally].
- Duplicate the collection to spread the risk, but discuss the commitment clearly



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### Case Study 11.8: Managing ex situ plants highly susceptible to pathogens

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