Myrtle rust and other eucalypt pests

Beccy Ganley and Lindsay Bulman

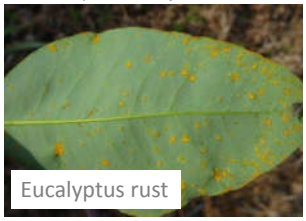
supported by forestgrowers commodity levy

FOREST GROWERS RESEARCH

What is myrtle rust?

- Rust disease – *Austropuccinia psidii*
- Can affect foliage, flowers and fruits
- Wide and expanding host range
- Wind-dispersed over long distances
- Spores can be transported on cars, clothing and personal effects

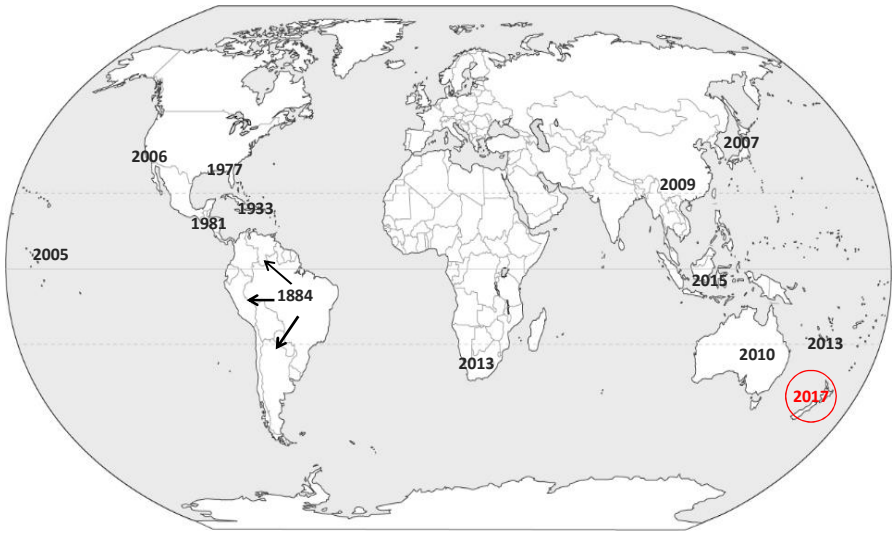
Acknowledge Angus Carnegie (NSW Department of Primary Industries) for photos



Austropuccinia psidii taxonomy

- Rust fungus originates from South America
- Internationally more than 8 strains of the pathogen
- Strain present in NZ is the “pandemic biotype”
- Same as the strain found in Australia, New Caledonia, Hawaii and other countries

Puccinia psidii on the move



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Host susceptibility

- Infects in excess of 450 species in 73 genera worldwide.
- All myrtaceous genera considered potentially susceptible.
- Species vary in their susceptibility to different pathogen strains
- Evidence of variation in susceptibility within a species.
- Most susceptible Australian hosts include:

Agonis flexuosa (willow myrtle), *Chamelaucium uncinatum* (Geraldton wax), *Decaspermum humile* (silky myrtle), *Eugenia reinwardtiana* (Cedar Bay cherry), *Gossia inophloia* (thready-barked myrtle), *Melaleuca quinquenervia* (paper bark tea tree), *Rhodamnia angustifolia, R. maideniana, R. rubescens* (scrub turpentine), *Rhodomyrtus psidioides* (native guava) and *Syzygium jambos* (rose apple).



Risk to New Zealand natives

Almost 30 native myrtaceous species

- *Kunzea* (kānuka)
- *Leptospermum* (mānuka)
- *Lophomyrtus* (ramarama)
- *Metrosideros* (pōhutukawa & rātā)
- *Neomyrtus*
- *Syzygium* (swamp maire)

Numerous exotic Myrtaceae species in New Zealand





Incursion timeline

- 4 April – Raoul Island
- 3 May – Kerikeri in Northland
- 17 May – New Plymouth in Taranaki
- 21 May – Te Kuiti in Waikato
- 12 June – Te Puke in the Bay of Plenty

Some of these locations are unrelated infected areas, for others there are direct tracebacks to an infected nursery/location.

- 93 confirmed sites:
  - Bay of Plenty (23), Northland (4), Taranaki (64), Waikato (2)
  - private (77), nursery (8), public land (2), commercial (2), depot (1), golf course (1), orchard (1) and retailer (1)

Susceptible Myrtaceae in NZ

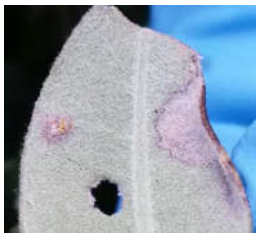
- Plant species detected on:
  - *Lophomyrtus bullata* - ramarama (57)
  - *Metrosideros excelsa, M. kermacadensis* and other species - pōhutukawa, northern rātā, southern rātā (35)
  - *Syzygium* - monkey apple, lilypily (3)
  - *Leptospermum scoparium* – mānuka (1)
  - *Eucalyptus* (1)
  - *Callistemon* - bottle brush (2).

Controlled area in Taranaki prevents movement of myrtle plants or green waste from this area



Pōhutukawa





Ramarama





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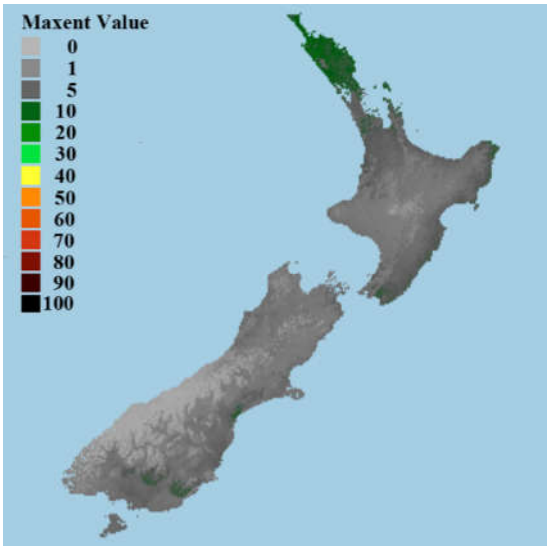
Climate suitability

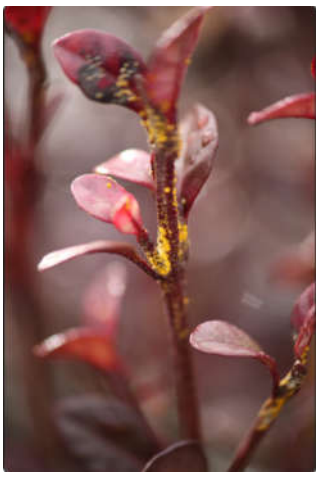


Stewart et al., 2017.

- Model for the *A. psidii* pandemic biotype suggests majority of NZ has suitable climate conditions
- Variability across NZ

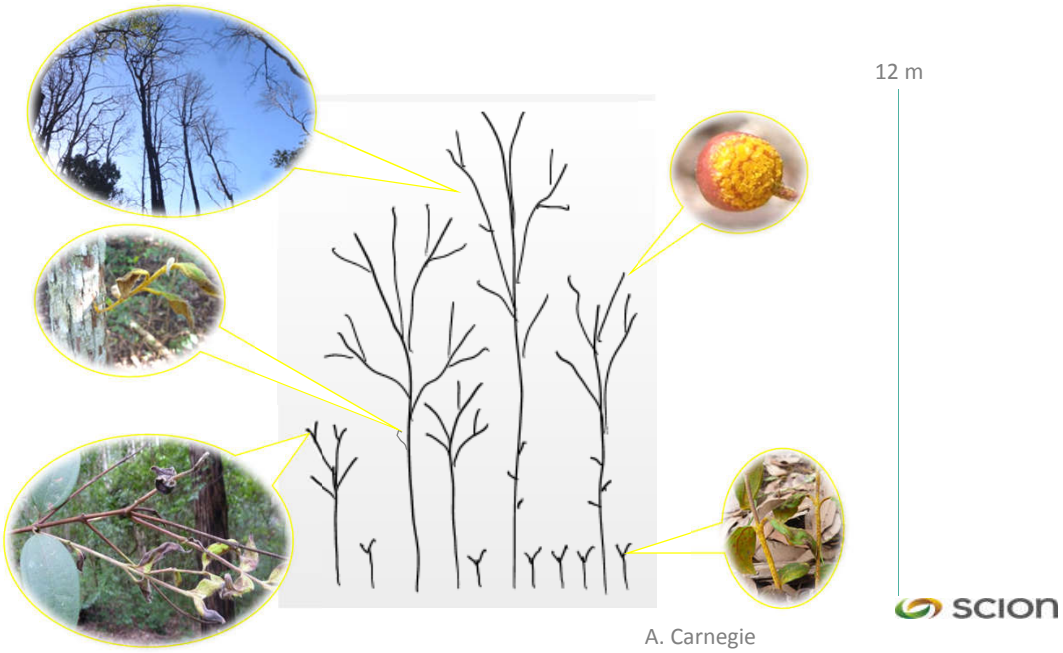
In Australia…

- Greatest impact in autumn/spring
- Under optimal conditions 2 weeks from infection to visual yellow spores
- Australian's think in NZ cooler climate it could be 6-8 weeks
- Not considered systemic



Ramarama

Ecosystem collaspe - *Rhodamnia rubescens*



Rhodomyrtus psidioides

Ecosystem impact in New Zealand

Forest composition

Birds

Insects

Control of myrtle rust

Limited options:

- Prevent spread
- Destruction of infected material
- Host resistance
- Chemical control
- No indication of effective biological control

How has Scion been helping?

- Three forest pathologist working in Te Puke surveying plants for myrtle rust
- Forest Industry Informatics – determining the ability to detect myrtle rust in real time using drones
- Forest Protection – morphological and molecular host identification.
  - Identified to species all 99 host plants found in NZ mainland plus *M. kermacadensis* specimens from Raoul Island.

Eucalyptus pests

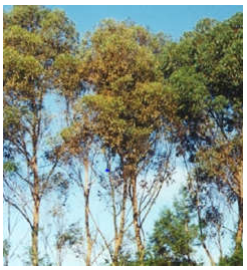
Paropsis charybdis – widespread, damaging, successful biocontrol elusive

Paropsisterna variicollis – East Cape, appears to be damaging, biocontrol potential

Uraba lugens – North Island, damaging, public nuisance, biocontrol completed

Eucalyptus pests

Cardiaspina fiscella – North Island, damaging, successful biocontrol



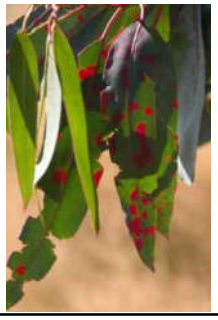
Thaumastocoris peregrinus – Upper North Island, damaging and invasive

Glycaspis brimblecombei – Mid-South Island, potentially damaging, potential biocontrol already present

Eucalyptus pests

Barron Road Syndrome – central North Island, mortality, suite of leaf fungi, no practical control

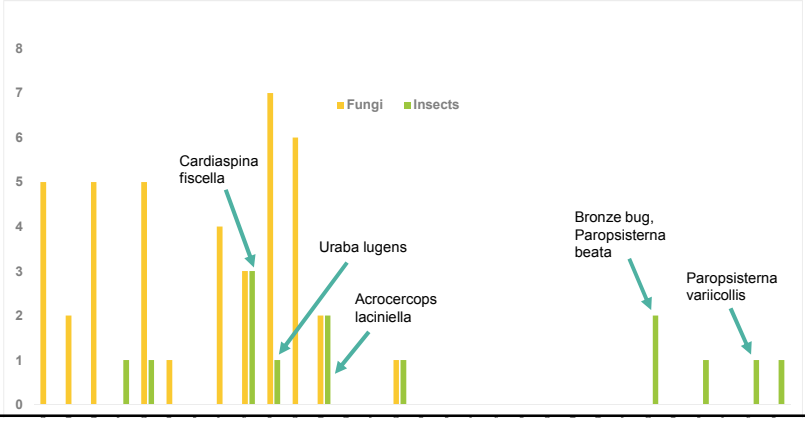
Septoria leaf blight – central North Island, extremely damaging, no practical control



Leaf spots – widespread, damaging, no practical control

Biosecurity and *Eucalyptus*

- About 180 *Eucalyptus* spp grown in NZ
- About 200 fungal spp and 60 insect spp recorded on *Eucalyptus* established in NZ
- In Australia 15-20,000 leaf feeding insects alone!
- Colonisation rates variable but new introductions will continue



Risk

- Australia New Zealand's largest trading partner
- Australia close to NZ
- Many eucalypt pests extremely invasive
- Pests likely to arrive without natural control agents
- Small eucalypt resource creates difficulty to fund control development
- New Zealand a vacant niche awaiting further eucalypt pest invasions

Solutions

- Biological control: very successful for gum tree scale, eucalyptus weevil, leaf blister sawfly, hopefully gum leaf skeletoniser
- Species selection: popular species change with new pest arrivals
- Chemical control for tortoise beetle (licence to operate considerations)
- Replacement: most effective but site matching has to be accurate and may not account for new pests

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17 October 2017

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