



Wide spread death of *M. polymorpha* trees caused by ROD.

Image: Barnes et al 2018.

Rapid ‘Ōhi‘a Death

Rapid ‘Ōhi‘a death (ROD) is a disease of *Metrosideros polymorpha* (‘Ōhi‘a lehua). This disease is not present in New Zealand. Help us keep ROD from establishing here by learning what to look for.



Image: Barnes et al 2018.

Dark brown to black vertical streaks of discolouration in wood typical of ROD.

ROD is caused by two species of *Ceratocystis* fungus, *C. lukuohia* and *C. huliohia*. Symptoms of ROD were first noted in 2014 in the Puna district of Hawai'i, killing many *Metrosideros polymorpha* ('ōhi'a). The pathogens causing these symptoms were not determined until 2018 and since then ROD has been found on the Islands of Hawai'i, Kaua'i, Maui and O'ahu. There could be devastating effects on New Zealand's native *Metrosideros* species (pōhutukawa and rātā), and possibly other native and exotic Myrtaceae if ROD establishes in New Zealand.

Symptoms to look for

- The whole crown or individual large branches show wilt rapidly.
- Leaves in the crown turn yellowish and quickly become necrotic and brown within days to weeks.
- Dead or dying branches still have brown leaves attached throughout the canopy.
- Black radial staining is observed in the wood which is a typical symptom of *Ceratocystis* species.
- *Ceratocystis lukuohia* is the most aggressive pathogen causing ROD, producing rapid crown wilt and extensive black radial staining in the wood on *M. polymorpha*.
- *Ceratocystis huliohia* is a less aggressive pathogen associated with ROD, leading to the slow development of crown wilt development, and to individual branch wilt. Wood staining may appear patchy and dispersed in cross sections and thin black lines following the contours of the cambium can also be present.



Typical crown symptoms of ROD.

Barnes, I., Fourie, A., Wingfield, M. J., Harrington, T., McNew, D., Sugiyama, L., Luiz, B., Heller, W., & Keith, L. (2018). New *Ceratocystis* species associated with rapid death of *Metrosideros polymorpha* in Hawai'i. *Persoonia: Molecular Phylogeny and Evolution of Fungi*, 40, 154.

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About Scion

Scion is the Crown research institute that specialises in research, science and technology development for forestry, wood and wood-derived materials, and other bio-material sectors.

Scion's purpose is to create economic value across the entire forestry value chain, and contribute to beneficial environmental and social outcomes for New Zealand.



Radial staining of *C. lukuohia*.

Hosts

The only known host is *Metrosideros polymorpha*.

Disease development and spread

- The fungus enters the trees through wounds.
- Main vectors for the disease spread are humans (movement of infected wood, contaminated tools and machinery), feral ungulates and insects (wood-boring beetles).
- Fungal mycelium growing through the vascular tissues will cause dark brown to black staining in the wood and will eventually block the transport of water and nutrients throughout the vascular system.
- ROD causes wilt symptoms resulting in crown death. An infected tree can take several months or years before showing visible symptoms of the disease.
- Trees appear to die in a haphazard pattern and do not radiate out from a single infected tree.
- Fruit bodies that yield large numbers of spores are produced under moist conditions on the wood.

Identification and testing

The Forest Health Reference Laboratory (FHRL) has the capability to detect both *Ceratocystis* species that causes ROD by using morphological and molecular techniques.

As required by the Biosecurity Act (1993), if you suspect that you have typical ROD symptoms call MPI Pest and disease hotline – 0800 80 99 66. MPI will coordinate how best to proceed with sampling and identification.

For more biosecurity factsheets visit:

