

I Think We Dodged a Bullet? Response Plan for a Myrtle Rust incursion on Lord Howe Island in October 2016



United Nations
Educational, Scientific and
Cultural Organization



Lord Howe Island Group
inscribed on the World
Heritage List in 1982

Lord Howe Island Board (LHIB)

Hank Bower – Manager Environment/World Heritage



Lord Howe Island

- 750 km NE of Sydney
- 1455 hectares
- 75% protected (PPP)
- Resident population 350
- Tourist limit 400
- LHI Board (LHI Act 1953)
- World Heritage Listed 1982



Settlement

Discovered 1788

Pigs, goats introduced prior to settlement

First settled in 1834

Cats introduced

Rats arrived 1918

Ongoing introduction of other pests since

Forest Reserve proclaimed by NSW

Government in 1870 - Kentia Palm Industry

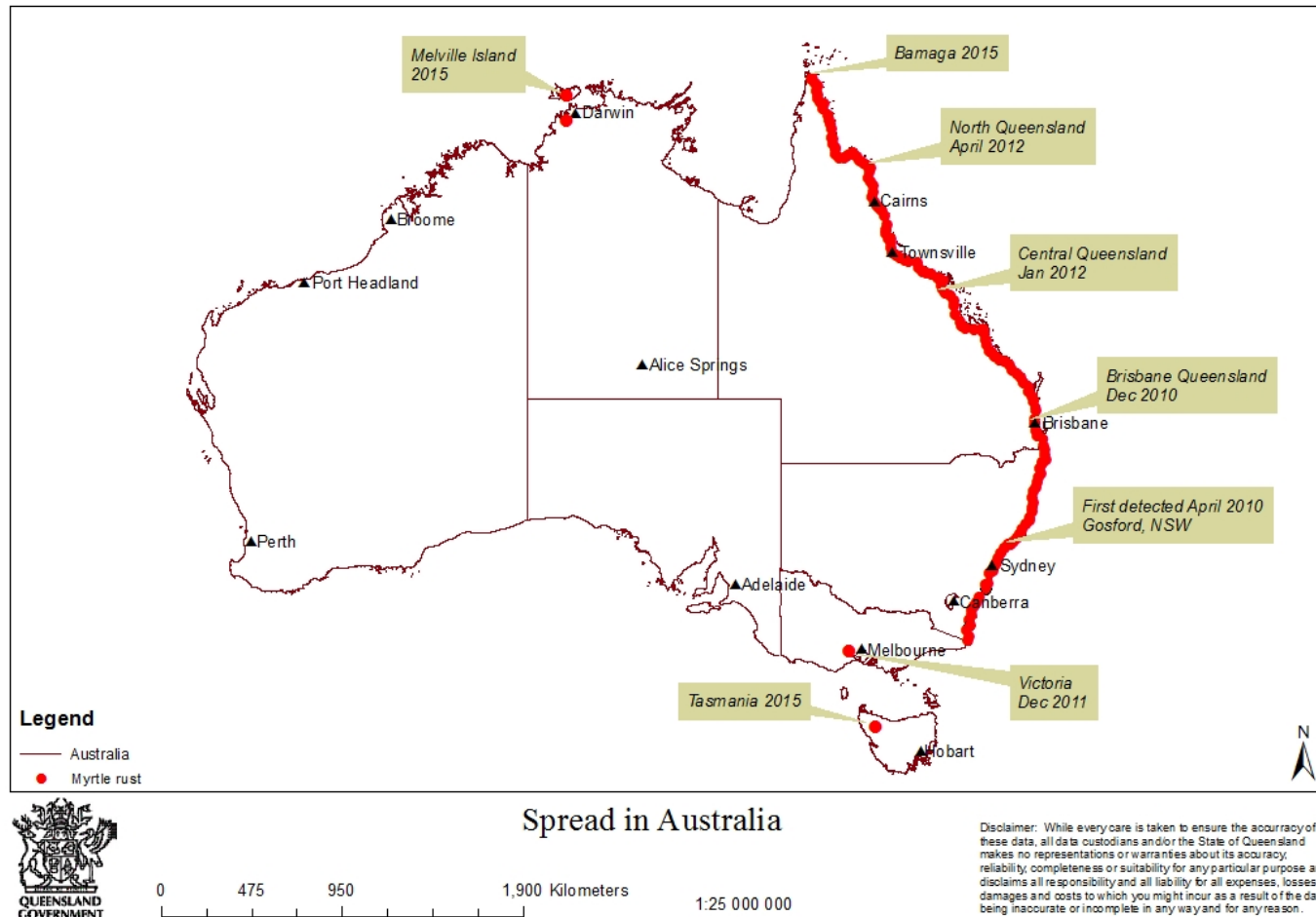
87% veg cover



Protecting Paradise from Myrtle Rust



Myrtle Rust first detected in Australia April 2010



- December 2010 eradication effort abandoned.
- Now established in NSW, Victoria and Queensland (east of the Great Dividing Range as far north as the Wet Tropics) outbreaks in Tasmania.
- More than 350 Australian native species considered susceptible (in the laboratory or in the wild), which equates to more than 10% of native Myrtaceae.
- Now considered endemic on mainland.
- Some previously common Myrtaceae species now considered regionally rare or near extinct (e.g. the once common Native Guava).

**2011 CSIRO undertook
susceptibility testing of
five LHI endemic
Myrtaceae.**

**All were found to be
susceptible in
laboratory conditions!**



Testing the susceptibility of key plant species
endemic to Lord Howe Island to myrtle rust

Louise Morin

CSIRO Ecosystem Sciences, Canberra

16 August 2011



Melaleuca howeana



Metrosideros nervulosa



Metrosideros sclerocarpa



Syzygium fullagari

Commenced installation of boot cleaning stations at all track heads and at some lodges in 2011



Increased community awareness of general biosecurity risks from 2011

How are these pathogens spread?

The movement of items or equipment that have been in contact with these pathogens/fungus can become contaminated and result in their spread into new environments. Equipment which may be in contact with the pathogens include:

- Vehicles, bike tyres
- Clothing, bags, hats/caps, rain jackets, footwear, hiking poles, walking sticks
- Sporting equipment, golf clubs, bowling balls
- Garden equipment including lawn mowers
- Camping equipment
- Importation of infected soil, potting mix, mulch, cut flowers, potted plants.



How to clean your gear

To help protect the island against the risk of infection by Phytophthora, Myrtle rust and other plant pathogens please remove any soil/mud from gear and treat all gear that has been in contact with soil or infected plants on the mainland. This also applies to returning residents.

The boot scrub bays

There are two types of boot scrub bays, the 'Sit Down' and the 'Walk Through'. Use the walk through bays every time you enter a track.

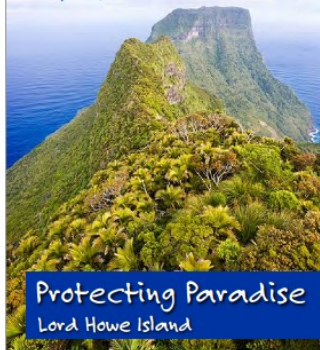


1. Read sign
2. Scrub boots
3. Open dig tray
4. Dig shoes, poles etc
5. Close lid
6. Thank you for helping protect Lord Howe Island



Mountain Rose (*Metrosideros nervulosa*) © Jack Shick
For more information or to report a suspected infestation of a plant pathogen please contact the Lord Howe Island Board
administration@lhib.nsw.gov.au www.lhib.nsw.gov.au
Lagoon Road, Lord Howe Island, NSW 2896
Phone: (02) 6563 2066 Fax: (02) 6563 2127

Myrtle Rust and Phytophthora prevention



Protecting Paradise Lord Howe Island

Myrtle rust & Phytophthora are exotic pathogens that can cause the death of certain plants. Please observe the strict quarantine regulations as these pathogens have the potential to cause major damage to Lord Howe Island's (LHI's) unique vegetation.



Myrtle Rust

Lord Howe Island (LHI) is currently Myrtle rust free. Help keep it that way.

Myrtle Rust (*Puccinia myrsina*) is an exotic fungus that impacts plants from the Myrtaceae family. This exotic fungus has spread along the east coast of Australia causing widespread decline of susceptible plants.



Myrtle rust affects plants leaves and flower buds and can cause plant death. It has a bright yellow fruiting stage. Lord Howe Island's endemic Myrtaceae plants, including the Mountain rose are susceptible to Myrtle rust and are at risk if it arrives to the island.



Yellow spores of Myrtle Rust.
(Puccinia myrsina)
Photo: D.R.O. Macdon

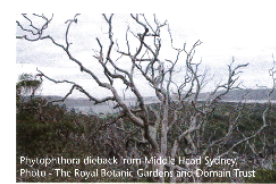
The import of Myrtaceae plants to LHI is prohibited

DO NOT touch or collect plants suspected of having Myrtle rust as this will spread the disease.

You can help by 1) sending a photo of suspected Myrtle rust infestations 2) advise of the approximate location and 3) report immediately - contact details over.

Phytophthora

Phytophthora is an exotic root rot fungus. It has killed large areas of native forest on mainland Australia and is spread through infected soil. LHI has many plants that are at risk from this fungus.



Phytophthora dieback from Middle Head Sydney
Photo: The Royal Botanic Garden and Domain Trust



Upon Arrival

Ask your accommodation provider about how to comply with quarantine regulations.

Wash all clothes (if not cleaned before leaving home). Brush footwear and accessories to remove soil/mud. Vacuum bags and pockets to remove seeds and soil.

Items such as boots, bags, hats, sporting equipment and walking poles should be washed or sprayed with 70% methylated spirits and water or Quatsan 81-500 to ensure gear is free of Myrtle rust spore, Phytophthora and other plant diseases.



Throughout your visit on LHI regularly scrub and clean your shoes and your walking poles using the boot scrubbing bays provided (see over).

Golfing equipment can be cleaned at the LHI golf course.

Visitor User Guide including biosecurity info:
<http://www.lhib.nsw.gov.au/services/tourism/lord-howe-island-user-guide>

2012 - Community Awareness Workshops hosted by Bob Makinson from the Royal Botanical Gardens

Keen gardeners with highly susceptible plants (e.g Rose Apple) encouraged to be our sentinels – keep watch



A course on Myrtle Rust recognition, reporting, risk assessment & management options is being presented by Bob Makinson from the Royal Botanic Gardens Sydney.

Myrtle Rust is a fungal disease of plants that has recently arrived in eastern Australia. It has already infected over 250 native species in the myrtle family (Myrtaceae) including Paperbarks, Lillypillis, Turpentine, and some Eucalypts, among many others.

This plant family contains 10% of Australia's native plant species and is dominant in many Australian ecosystems, is important for conservation, forestry, commercial and home horticulture, beekeeping for bush products.

On Lord Howe Island plant species that are vulnerable to Myrtle Rust include the Mountain Roses, Scaly Bark, Melaleuca, and Tea-Tree. The impact of the rust spreading on LHI is of concern as recent testing of the Island's endemic Myrtaceae by CSIRO in laboratory conditions has confirmed that all of

If you walk in the mountains or are an avid gardener or lodge owner... this course is important. We all play an important role in helping to detect Myrtle Rust and in protecting the island's unique vegetation.

**BE INFORMED -
BE PROACTIVE**



Myrtle Rust – a new threat to Australian and Lord Howe Island biodiversity.

Training Sessions in February 2013

- Mon 4th (Full Course – 1 day)
 - Tues 5th (Short Course – 3 hrs)
 - Tues 5th (evening info session – 1hr)
- The course is free, but spaces limited.

Lord Howe Island is currently Myrtle Rust Free!

All of the endemic Myrtaceae plants on LHI are keystone species found in plant communities on the coastal fringes, foot hills and in the cloud forest. The implication of Myrtle Rust spreading to LHI is not fully understood. Come and learn why we don't want Myrtle Rust on LHI and why we should take measures to stop its spread.

This course will provide information on the disease, and help you to:

- identify species & ecological communities at risk
- how to monitor before & after the disease arrival
- assess the risk & consequence of the spreading the disease and how to avoid doing so.

**Contact the LHIB for more information & to book in.
NB: Only basic refreshments provided.**

Presented by the Australian Network for Plant Conservation Inc. in association with the Royal Botanic Gardens & Domain Trust Sydney and supported by the Lord Howe Island Board, Office Environment & Heritage, Bjarne K Dahl Trust and Caring for our Country

Response kit set up in 2012 (just in case).

- registered fungicides (x 2)
- protective equipment
- containment tape
- bags for contaminated gear
- decontamination equipment – hand held sprayers etc

2015 - Rapid Response Plan developed

Lord Howe Island

Myrtle Rust Rust Response Plan 2015



Contain and eradicate

- The LHB will aim to contain and eradicate incursions of Myrtle Rust on the island to prevent its spread and impact.
- Depending on the future extent and spread of Myrtle Rust the LHB will decide whether to step back to control and management of high priority assets. The initial response however will be contain and eradicate Myrtle Rust.

Reporting an outbreak

In the event of a suspected sighting:

- Do not touch, move or collect samples from the infected plant
- Record location with GPS if possible if not, note how to get to infected area
- Leave the plant/site undisturbed
- Immediately contact Lord Howe Island Board (6563 2066) to inform the Flora Management Officer or World Heritage Manager

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- You may be asked to show LHB officers the location of the plant

Immediate response to a report of an outbreak

- Retrieve the rapid response **Myrtle Rust** kit located in LHB chemical shed and take to the site; with the intent of treating the site.
- Clean spray kits and equipment that will be entering the site with 70% ethanol (metho): water solution.
- Wear full PPE
- If confirmed as Myrtle Rust, apply fungicide [Mirador 250 SC] at an application rate of 4mL to 10L water.
- Mix enough only for use on the site.
- Spray the infected host, the ground below the host as well as the surrounding area.
- Set up exclusion tape, to quarantine the perimeter. Close area to public access.
- All equipment, clothing and other objects that entered the infected site must be disposed of or thoroughly washed and sprayed with 70% ethanol:water solution before leaving the site.
- Spray suits in garbage bags.
- Spray all remaining gear with 70% ethanol:water solution
- Take record of location, host species, extent of infestation and chemical use records; persons on site.
- **Monitor plants 3-4 days post fungicide application. SENDONG ADVICE FROM TASMANIA RE: IF THEY REMOVED INFECTED PLANTS POST TREATMENT WITH FUNGICIDE. Noting that they have contained outbreaks of Myrtle Rust**
- Hygiene protocols for staff working in the PPP and visitors will be adopted.

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Surveillance on island following a confirmed outbreak

- Make a community announcement and inform all stakeholders.
- Advise the quarantined perimeter is out of bounds without permission until further notice.
- Investigate the surrounding area to determine the extent of the infection. Using minimal staff following strict PPE protocols to reduce the spread of infection.
- Undertake inspections for 'infected host species' in the Settlement, and on tracks in the Permanent Park Preserve.
- Undertake inspections with binoculars to avoid close contact, and GPS track log search effort.
- Focus survey effort on sentinel species (e.g. Rose Apples *Syzygium jambos* and areas known to have concentrations of *Myrtaceous* species). See list of leases for priority inspection with susceptible species.

Community preparedness in the event of an outbreak

- There are numerous introduced *Myrtaceae* species in gardens in the Settlement that are prone to Myrtle Rust. Rose Apple *Syzygium jambos* is quite common and is highly susceptible and may pose an immediate dispersal point. These plants are of a tall stature and should be lopped/ pruned to at least 2 to 3 m. In the event of infection they can be readily and safely treated with fungicide. This will avoid the scenario of having to treat an 8m tall tree, which would be near impossible and will increase risk of spread due to its height and exposure to winds.
- It is recommended that a survey of leases is undertaken to identify 'high risk' sites which will form an immediate inspection response in the event of an outbreak.
- Leaseholders will be invited to participate in monitoring and awareness.

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Rapid Response Kit checklist:

- X2 respirators
- X2 rubber glove sets
- X2 glasses/protective eyewear
- X1 5L Mirador (Azoxytrobin) 250 SC fungicide
- X2 full bodied disposable suits
- X1 roll of exclusion or pink tape
- X2 garbage bags to contain infected clothing and equipment
- X1 bottle of methylated spirits (ethanol) [70% ethanol:water ratio] to clean gear.

Approved Fungicides

- Mirador (Azoxytrobin) 250 SC fungicide

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October 2016 – Myrtle Rust detected on LHI



- 2013 detected New Caledonia
- 2016 detected Norfolk Island
- Raoul Island detected ???
- 2017 detected New Zealand



What did we do?

- Alerted the Community & Government Authorities

Myrtle Rust - ALERT

An outbreak of Myrtle Rust has been detected on Lord Howe Island. It is an exotic plant pathogen - rust fungus disease.



If you see it...report it immediately

It only affects plants from the MYRTACEAE plant family – eucalypts, melaleuca, mountain rose etc. **All of Lord Howe Islands endemic MYRTACEAE plants are susceptible. This is serious. It has caused the decline and death of MYRTACEAE plants on the mainland.**

It is confirmed on 3 properties in the Settlement. It has infected Rose Apple – *Syzygium jambos* & Bottle Bush – *Callistemon*.

WHAT CAN YOU DO?

- **DO NOT touch infected** plants - this will spread the disease.
- Take a photo and mark site with a ribbon
- Report your sighting IMMEDIATELY

If think you have seen Myrtle Rust and are unsure – report it to the Board and we will confirm its identification. Call 02 - 65632066



Developed inspection procedures, hygiene protocols and inspection forms

Inspection Procedures

1. Take note of lease you are inspecting the arrival and departure time
2. Advise lease holders of your arrival and greet them kindly
3. Ask if they have seen any Myrtle Rust
4. Ask for locations of Myrtaceae plants.
5. Inspect entire property – nooks and crannies.
6. Inspect both native and introduced MYRTACEAE PLANTS
7. Record presence of ALL MYRTACEAE plants (native and introduced)

If you find MYRTLE RUST

1. DONT TOUCH THE PLANT
2. Install quarantine TAPE beyond the perimeter of the plant
3. Advise Leaseholder to NOT TOUCH THE PLANT
4. Radio the LHIB and advise of infected plant ASAP.

Hygiene protocols – Myrtle Rust Treatment

- All equipment (including the car) and personnel and clothing must be decontaminated before leaving the site. Even for a short visit away from the site.
- NO person can leave the site without changing clothes and decontaminating.
- Infected clothing must be decontaminated and bagged; spray outside of bag also.
- The outside and inside of the car – including seats must be decontaminated when leaving the site, at any time.
- Decontamination spray [metho 70% diluted in water]

Managing Myrtle Rust Material – BE SCARED

Removing plants infected with Myrtle Rust

- All plants have been prior sprayed with Miridor – however treat all material as if it is 100% ACTIVE
- Set up Black Plastic Sleeves
- **Create a clear path** into the site to prevent people brushing up against infected foliage – carefully prune back any overhanging foliage and place in bag.
- **For trees that will be stem injected** – prune back lower foliage and place in bag.
- **For shrubs and seedlings** – first cut foliage then bag.
- **All material in bags must be sprayed with Miridor 4ml / 10L**
- Wrap bags up and tape – so they are water proof.
- Lay bags in sun for 6 weeks.

Working in Myrtle Rust

- Wear old clothes or spray suit and old shoes or gumboots
- Avoid brushing up against plants
- When leaving the site – change into new clothes/ bag dirty clothes
- Spray all gear and equipment with metho 70%
- Spray shoes before entering car and exiting.
- Decontaminate car at Board Deport – with metho (inside and out).

INSPECTION FORM – MYRTLE RUST _ LORD HOWE ISLAND

Date of inspection:

Start Time:

Finish Time:

Inspection team:

Name of lease holder:

Lot/DP:

Native - Myrtaceae plants present on property (tick)

Plant species	No.	Infect'd	Plant species	No.	Infect'd
Mountain Rose- <i>M. nervulosa</i>			LHI Melaleuca		
Mountain Rose – <i>M. sclerocarpa</i>			Scaly Bark		
LHI Leptospermum					

Introduced -Myrtaceae plants present on property (tick)

Plant species	No.	Infect'd	Plant species	No.	Infect'd
Brush Box					
Callistemon			Hawaii Christmas Bush		
Eucalypt Species			NZ Christmas Bush - Kermadec		
Turpentine			NZ Christmas Bush (Lighter coloured flower)		
Feijoa			Rose Apple – <i>Syzygium jambos</i>		
Lilly Pilly			Water Gum		
<i>S. australe</i> Brush Cherry			Wax Jambu- <i>Syzygium samarangense</i>		
<i>S. oleosum</i> Blue Lillypillly			Willow-leaf Myrtle		
<i>S. smithii</i> Creek Lillypillly					

Conducted surveys across the Settlement and created an inventory of all Myrtaceous plants per lease (species – native or introduced, numbers and presence/absence of MYRTLE RUST).

Any potential sightings – **NO TOUCH**, buffer with quarantine tape, spray team alerted!

Kept government agencies informed and ministers briefed

Liaised with NSW Department of Primary Industries biosecurity staff on best approach

Sent out information to all islanders & tour operators

Immediately followed up **on all** enquiries.

Immediately treated all infected plants with registered fungicide and monitored treatment sites weekly.



First Site (one plant)
Back Pack Sprayer





Second site: over 100 plants with many over five metres tall which required quick spray unit to penetrate dense foliage & reach the infected foliage at the



Erected quarantine tape around all infected sites to restrict access



Two weeks after fungicide treatment all infected plants and highly susceptible species were controlled by cut and paint, or if too large they were stem injected with herbicide (to reduce disturbing infected foliage & spreading of spore).



Trees were later felled to ensure effective control, to improve monitoring and to prevent regrowth.

Small plants and low hanging foliage cut and bagged into large (human sized) tough bags, then doubled wrapped in black plastic for solarisation (minimum of 6 weeks).



Removed all Rose Apple *Syzygium jambos*, Willow Myrtle *Agonis flexuosa* and Fiji Fire *Metrosideros vitiensis* (considered eradicated).

A key was the larger Rose Apples that were initially stem injected needed to be felled by chainsaw as some had retained live leaves which showed early stages of reinfection!





After 10 weeks – bagged solarised material was burnt in a hole at dump under waste timber.

Then buried.

Don't burn live infected foliage – it will spread the spore



- Ongoing monitoring during summer months
- Current status  **Eradicated** from LHI.
No Myrtle Rust detected post treatment in November 2016 (following targeted + incidental monitoring).
- Any new detections  implementation of the **Rapid Response Plan**

Our Message to other islands

- Remain Alert
- Identify species at risk and highly susceptible species and infection pathways
- Raise Awareness
- Work with the island caretakers – sentinels that will form part of your Keep Alert - Rapid Response Group
- Pre-emptive pruning to reduce height of high risk species in the event you need to spray
- Rapid Response Kit
- Don't burn infected foliage but monitor plants post fire
- Decontaminate gear – simple hand spray and metho/water always!!!!!!!



Protecting Island biodiversity
for current & future generations

Biodiversity Conservation Benefits
Local and Global Significance