

Don't be a spreader! Arrive Clean. Leave Clean.

Plant Hygiene advice for Conference attendees.

The Australian Network for Plant Conservation is a strong advocate for national and domestic plant biosecurity. Plant pests and diseases are a rapidly growing threat to our native flora, as well as to agriculture. We work to prevent the spread and interchange of all plant diseases and pests.

This 2024 conference will be held on the edge of the east Australian Myrtle Rust zone. You could easily pick up Myrtle Rust spores on your clothing or gear. On field trips, we will also be visiting sites sensitive to species of *Phytophthora* root diseases, and other sites potentially containing these pathogens – we must avoid spreading lineages of this and other soil-borne diseases.

We seek your cooperation and commitment in ARRIVING CLEAN and LEAVING CLEAN.

For people returning to or travelling to WESTERN AUSTRALIA or SOUTH AUSTRALIA after the conference, see the following sites:

- **WA Biosecurity Alert advice** at <https://www.agric.wa.gov.au/plant-biosecurity/myrtle-rust-threat-western-australia>
- **WA DBCA alert page:** <https://www.dbca.wa.gov.au/management/threat-management/plant-diseases/myrtle-rust>
- **SA PIRSA plant pests page:** https://pir.sa.gov.au/biosecurity/plant_health/emergency_and_significant_plant_pests/myrtle_rust

Before attending the Toowoomba conference, and again before returning home, please study and apply the detailed precautions below to avoid becoming a spreader.

Arrive Clean, Leave Clean: Guidelines to help you prevent the spread of plant diseases and weeds that threaten native plants and ecosystems

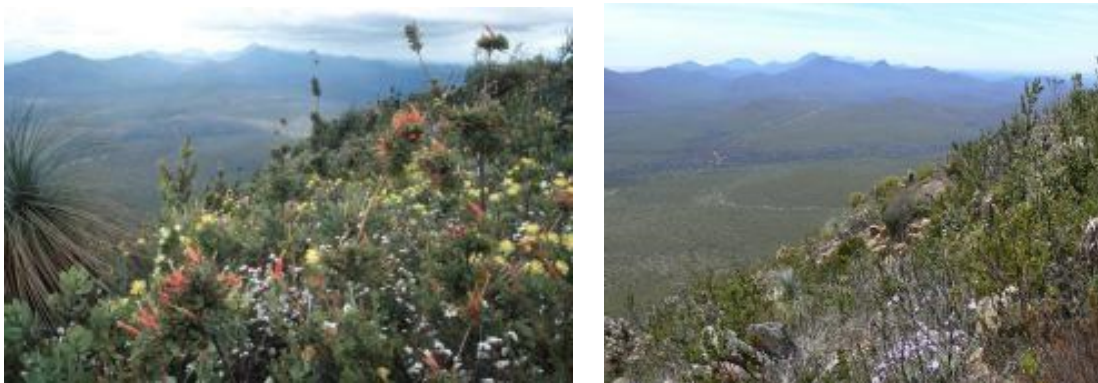
With modern travel, people and goods are often the main vector of transmission of environmental diseases, pests and weeds from area to area. Once these pathogens and pests invade new areas of bushland, eradication is often impossible. Follow these guidelines to help prevent their spread.

Clothing, hats, footwear, tools, equipment, machinery and vehicles can transport invasive species like *Phytophthora* pathogens, myrtle rust (*Austropuccinia psidii*), insects and weeds into our bushland. Simple precautions before and immediately after travel within Australia, and overseas, can greatly reduce the risk.

***Phytophthora cinnamomi* ('Pc') and other *Phytophthora* pathogens**

Phytophthora ('fie-toff-thora') is a genus of plant pathogens. Several species introduced to Australia are known to be threats in Australian ecosystems. The best-known of these in Australia is *Phytophthora cinnamomi*, sometimes abbreviated to 'Pc'.

Phytophthora cinnamomi is a soil-borne pathogen. It attacks the roots of susceptible plants, degrading the root system and reducing the ability of the plant to absorb water and nutrients. This causes symptoms of 'dieback', which can lead to plant death.



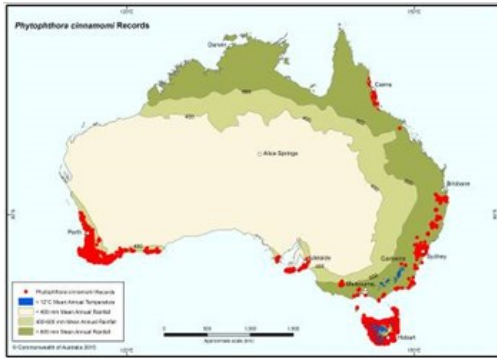
Photos: (left) Wildflower shrubland on Mondurup Peak, Stirling Range before *Phytophthora* dieback (Robert Olver); (right) Mondurup Peak after *Phytophthora* dieback (Department of Biodiversity, Conservation and Attractions, Western Australia)

Under favourable conditions *Phytophthora* species can spread easily and quickly, and usually cannot be eradicated once established in an area.

These guidelines to help minimise the risk of spreading *Phytophthora cinnamomic*, also apply to other species of *Phytophthora* present in Australia.

What species does *Phytophthora cinnamomi* threaten?

Thousands of Australian native plant species are susceptible to *Phytophthora* pathogens, and some are at risk of extinction due to its impacts. Species in the Proteaceae plant family are particularly impacted by the disease. The impact of *Phytophthora* infestations on plant communities may also lead to declines in insect, bird and animal species due to the loss of shelter, nesting sites and food sources.



Map: *P. cinnamomi* isolations, records of impact and broad climatic envelope of *P. cinnamomi* susceptibility in Australia. RED: Pc records. BLUE: Too cold. BEIGE: Too dry. DARK GREEN: Rainfall suitable for Pc. This map was published in the *Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomi* in 2014. It does not represent the precise distribution of the pathogen in Australia and is for general information only. Caption adapted from source.

Where is *Phytophthora cinnamomi* found?

Phytophthora cinnamomi thrives in warm, moist conditions with mean temperatures between 15°C and 30°C , and with rainfall greater than 400 millimetres per year. Its impact is greatest in Western Australia, Victoria, Tasmania and South Australia. The Northern Territory remains the only jurisdiction unaffected, as its environmental conditions are generally unfavourable to the pathogen.

How does *Phytophthora cinnamomi* spread?

Phytophthora cinnamomi spreads through soil, water and organic matter. It can remain dormant for long periods during dry weather and is usually impossible to eradicate from infested areas, so limiting further spread is critical. Any activity that moves soil, water or plant material can spread the disease. This includes soil on tools, footwear and vehicles.

To help to prevent the spread of this plant disease:

- **Arrive clean, leave clean: ensure all clothing, hats, footwear, tools, equipment, machinery and vehicles are free of mud, soil and organic matter before entering and existing bushland and new areas. Launder and washdown with detergent solution.**
- **Ensure any soil, plants or other materials being deliberately transported are both permitted under domestic biosecurity laws, and are certified free of weeds and pathogens.**

Myrtle Rust

Myrtle Rust is a disease caused by the introduced fungus *Austropuccinia psidii*. It affects trees and shrubs in the Myrtaceae plant family, attacking young, soft, actively-growing leaves, shoot tips and young stems, as well as fruits and flower parts in some species.

The first signs of Myrtle Rust infection are tiny raised spots or pustules on infected leaves. After a few days, the pustules erupt into distinctive bright yellow spore

masses. The disease can cause deformed leaves, heavy defoliation of branches, dieback, stunted growth, and eventual plant death.

What species does myrtle rust threaten?

Myrtle Rust only affects plants in the Myrtaceae family, which includes bottle brushes (*Callistemon* species), tea trees (*Melaleuca* and *Leptospermum*), lilly pillies (*Syzygium*) and eucalypts (*Eucalyptus*, *Angophora*, and *Corymbia*). The Myrtaceae in Australia accounts for about 10% of Australia's native flora and dominates many native plant communities.

More than 350 native species are known to be susceptible to myrtle rust infection. This host list is expected to grow. Close to 50 species are known or suspected to be under serious decline as a result of this pathogen, which only arrived in Australia in 2009-10.

Repeated infection cycles may cause plant death through defoliation. Even in species where death of adult plants does not occur, seasonal growth, flowering, and fruit set can be seriously compromised.



Photos: (left) Myrtle Rust infection on *Melaleuca quinquenervia* (Broad-leaved Paperbark), north-east NSW, 2011 (Peter Entwistle); (right) Mass death of large trees of *Rhodomyrtus psidioides* (Native Guava), north-east NSW, 2013 (Kris Kupsch).

Where is Myrtle Rust found?

Myrtle Rust is now established along the east coast of Australia from southern New South Wales to Cape York, mostly east of the Great Escarpment but getting onto the tablelands around Toowoomba and Atherton. It is not a threat to the drier inland regions. Myrtle Rust is also present across the Top End of the Northern Territory, and marginally just over the border in the far north-east of Western Australia. Two outbreaks, both caught early and eradicated, have occurred on Lord Howe Island. It is present in parts of Victoria and Tasmania in production nurseries, wholesale outlets, and cultivated situations (but not yet known in bushland in these States). As at June 2024, Myrtle Rust has not been detected in South Australia, nor in most of Western Australia, but moister regions and vegetation types (particularly the Myrtaceae-rich far south-west of WA) are at risk of myrtle rust establishment. Domestic import restrictions on plants and plant material apply for non-infested jurisdictions – check your State Department of Agriculture website.

How does myrtle rust spread?

Myrtle Rust spores are prolific, minute, and easily airborne. They can be carried on the wind, and locally by animals. However, the main vector between distant areas is likely to be human, via contaminated clothing, hats, footwear, personal accessories, equipment or vehicles, or through transport of infected plant material. If these spores then come in contact with suitable plant material in an uninfected area, a new infestation may start. It is almost impossible to eradicate myrtle rust from infested bushland. Preventing spread to WA and SA is critical.



Photo: Yellow Myrtle Rust spores on clothing after a brush-past contact with an infected shrub (R.O. Makinson).

To help to prevent the spread of myrtle rust:

Arrive clean, leave clean:

- **Wash all clothing, hats and gloves that may have picked up spores before returning to areas or sites free of myrtle rust (or bag these items securely and launder them immediately upon return). Use a warm or hot machine wash with detergent – this will kill the spores.**
- **Disinfect other items that may be contaminated (including hats, footwear, tents, tarps, tools, equipment, machinery, vehicles, backpacks, and personal items), before your return to un-infected areas: either spray them thoroughly with a mix of 70% ethanol or methylated spirits in 30% water, or wash down thoroughly with a solution of strong farm- or vehicle-grade detergent.**