

MARRI DECLINE

Nature Conservation Information Sheet



What is marri canker disease?

A severe canker disease caused by the fungal pathogen *Quambalaria coyrecup* is contributing to the decline in marri trees (*Corymbia calophylla*) in the Margaret River region. The fungus enters through wounds or cracks in the bark and results in the death of areas of bark and the cortex tissue below. The infected area develops an unsightly canker which often exudes a large amount of kino (gum), staining the branch or trunk red. Cankers can occur on the trunk, branches or twigs of the trees and can result in limb fall and even death of the whole tree if the canker ringbarks the limb or trunk.

A second fungal pathogen *Quambalaria pitereka* is also known to cause leaf, shoot and flower blight in marri trees in the Margaret River region. This fungus affects the leaves, flower buds, flowers and fruit.

Native trees do best when growing in healthy bushland. They rely on complex interactions with the soil and other plants and animals. When these interactions are disturbed trees are more susceptible to attack from insects and plant pathogens. An accumulation of environmental stress factors such as climate change, drought, loss of native understorey, fire, changes to soil composition and structure, overabundance of insect pests, and other plant pathogens means marris are more susceptible to disease.

The diseases also affects other *Corymbia* species including amenity planted red flowering gum (*Corymbia ficifolia*).

Researchers at Murdoch University's Centre for Excellence for Climate Change, Woodland & Forest Health are currently undertaking research to improve understanding about the underlying causes and practical management solutions to marri decline in south west WA. Their research includes:

- The establishment of treatment trials to investigate the efficacy of fungicide and nutrient treatments in controlling disease development; and
- Provenance trials to select disease resistant strains of marri for future plantings.

Canker disease can be recognised by the following identifying symptoms



The bark surrounding the affected area cracks and is eventually shed. Large amounts of kino (gum) are produced, staining the limb or trunk dark red.

Large target-like lesions are formed as a result of a progressive 'tug-of-war'. The tree produces a defence response that 'walls off' the diseased region, but with time the fungus manages to penetrate this barrier and reinvades.

The pathogen *Quambalaria coyrecup* is sometimes observed sporulating on the diseased area. This contains many, millions of spores that can be spread by rain splash, wind, insects and pruning.

Once the disease has progressed to the point of girdling the host, it has effectively ringbarked the tree resulting in the death of the affected limb or the entire tree if the trunk has been girdled.

Look-alike symptoms

Damage to marri trees may not always be a fungal related canker. Marri trees also ooze red kino from wounds, insect damage and branch stubs. They often have small cracks that ooze kino, and while in some cases these cracks can develop into cankers, in many instances the tree will callus these off, and all trace of them eventually disappears. Borer damage caused by Eucalyptus long-horned borer (*Phorocantha semipunctata*) and Bullseye borer (*P. ancanthocera*) can resemble a canker, but on closer inspection you may see frass or evidence of an emergence hole. Extensive borer damage that has led to branch and tree death is easily determined by the presence of borer galleries that become visible as the bark drops.

What you can do

There is currently no definitive recommendations on management to protect trees from marri decline. Undertaking management that will protect and enhance the environmental conditions surrounding affected marri trees may help. This includes restricting stock access, planting understorey species, mulching and watering where appropriate. Fungicide and nutrient treatments, as outlined below, can also be used to boost the defences of marri trees.

Phosphite is a systemic, biodegradable fungicide that protects plants against disease by boosting the plant's own natural defences. Phosphite is environmentally safe, inexpensive and has a very low toxicity to animals. Phosphite needs to enter a plant's water transport system in order for it to be effective. This can be done by injecting phosphite into trees, or spraying the leaves of understorey plants. Go to <https://www.natureconservation.org.au/wp-content/uploads/2019/03/Phosphite-injection-using-chemjet-syringes.pdf> for instructions on using phosphite. Depending on how it is applied, phosphite can provide protection for vulnerable plants to disease for up to five years.

Medicap nutrient implants provide the tree with a slow release nutrient that benefits the tree over a long period of time, with the aim of improving plant vigour and general health. The nutrient implants are delivered directly into the tree and are designed to remain safely within the tree with the contents delivered systemically throughout the tree with sap flow. Medicap nutrient implants can be purchased from <http://arborcarbon.com.au/services.html>