



# RESEARCH FINDINGS 2012

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*The fungal pathogen Quambalaria coyrecup has been identified as the causal agent of marri canker disease and is thought to be an endemic (native) pathogen. The reasons for this recent disease epidemic are undetermined, however the Centre has recently been awarded a three year ARC linkage grant to explore the underlying causes of marri decline in the south west and help formulate management solutions.*

## Identifying marri canker disease

### Introduction

A severe canker disease has been contributing to decline in marri (*Corymbia calophylla*) for some years now. Cankers are a symptom caused by the death of areas of bark and the cortex tissue below that, and are caused by the plant pathogen *Quambalaria coyrecup*. The canker is present on trunks, branches and twigs of trees of all ages.

Canker disease occurs on marri across the natural range of this tree in south west WA. It also affects amenity-planted red flowering gum (*C. ficifolia*). Once canker symptoms are evident, trees do not appear to be able to recover, and given the large number of infected trees, the future health of marri in south west WA is of serious concern.

### Identifying the symptoms

The canker disease can easily 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 reinvade.*



*The pathogen Quambalaria coyrecup is sometimes observed sporulating on the diseased area, visible as a powdery white mass. 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 ring barked the tree, resulting in the death of the affected limb or the entire tree if the trunk has been girdled. Observe the 'target like' scarring around the trunk.*



### Look-alike symptoms

In some circumstances, determining whether what you are observing is a canker or not can be unclear. Marri are renowned for oozing a red kino (gum) from wounds, insect damage and branch stubs. They also often have small cracks that ooze kino, and while in some cases these cracks can be followed through as they develop into full blown cankers, in many instances the tree will callus these off, and all trace of them eventually disappears. An example of such a crack is seen in Figure 1.



Figure 1 If the tree you are assessing has cracks like this, but no obvious true cankers, you can record it as a tree that has cracks, which can be monitored to see if they develop into cankers or not.

Recent drought years have seen an increase in the incidence of borer damage caused by *Phorocantha semipunctata* (Eucalyptus long-horned borer) and *P. acanthocera* (Bullseye borer). This damage can resemble a canker, but on closer inspection you may see frass or evidence of an emergence hole (see Figure 2).



Figure 2 Recent drought years have seen an increase in the incidence of borer damage, arrow indicates exit hole of *Phorocantha semipunctata*.



Figure 3 Borer galleries often become visible as the bark drops.

Extensive borer damage that has led to branch or tree death is easily determined by the presence of borer galleries that become visible as the bark drops (see Figure 3).

### Control & Management

While there have not yet been control or management options developed for this disease, fencing off remnant stands of trees to support seedling recruitment and planting understorey species is encouraged.

As part of the marri decline research project, the Centre is looking at a number of possible treatments including application of fungicides and nutrients.

### More information

The Centre is currently working with the East Metropolitan Regional Council to develop a 'Marri App' — a smartphone application to record marri health around the south west of WA. This mobile app has been designed to be used by interested members of the public, local government agencies, foresters and scientists to capture GPS location, incidence and severity of cankers on trees, and to lodge photographs and other site information to a central server, providing a valuable addition to our current knowledge on the incidence of this disease.

It will be used not only to collect data on canker incidence but also to create wider involvement in conducting treatments. It is due to be rolled out in June 2013. For more information on the marri decline research project or to volunteer your help, please contact Cielito Marbus at [c.marbus@murdoch.edu.au](mailto:c.marbus@murdoch.edu.au) or Giles Hardy at [g.hardy@murdoch.edu.au](mailto:g.hardy@murdoch.edu.au) or phone (08) 9360 6272.

### Acknowledgments

Forest and Wood Products Research and Development Corporation, ARC Linkage LP120200581, Alcoa of Australia, Cape to Cape Catchment Group, Department of Environment and Conservation, and Eastern Metropolitan Regional Council are acknowledged for their financial support.



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