

The role of *Phytophthora* in the decline of *Corymbia calophylla* (marri), a dominant and widespread tree species in southwest Western Australia

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Corymbia calophylla (marri), a keystone tree species in the majority of woodlands and forests in the southwest of Western Australia, is suffering a major decline syndrome associated with the canker fungal pathogen *Quambalaria coyrecup*. Evidence suggests *Q. coyrecup* is endemic, however, mortality attributed to the canker pathogen has increased since the 1970s with disease incidence and severity much greater in anthropogenically disturbed areas, suggesting there are additional biotic and abiotic predisposing factors. The current study investigated the role of *Phytophthora* species in marri decline. An extensive survey was undertaken across the marri range, an area of approximately 70 000 km². Within this region, 62 sites were assessed for canker disease presence, and soil samples collected for *Phytophthora* detection. *Phytophthora* species were recovered from more than half the sites, with up to three species present at a single location. A total of six *Phytophthora* species, including *P. boodjera* prov. nom., *P. cinnamomi*, *P. cryptogea*, *P. elongata*, *P. multivora* and the previously undescribed *Phytophthora* sp. *calophyllaphile* prov. nom. (a species closely related to *P. quercina*), were isolated from the roots and rhizosphere of healthy and diseased marri. The pathogenicity of these species towards marri seedlings was tested in glasshouse experiments, with isolates of *P. cinnamomi* and *P. multivora* significantly reducing root health and mass. The results of these experiments and their implications for marri health will be discussed in detail.