National best practice and risk assessment for the management of *Phytophthora cinnamomi* in natural ecosystems

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Disease in natural ecosystems of Australia caused by the introduced plant pathogen *Phytophthora cinnamomi* is listed as a key threatening process under the Commonwealth’s Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The Act requires the Commonwealth Government to prepare and implement a threat abatement plan for nationally coordinated action to mitigate the harm caused by *P. cinnamomi* to Australian species, particularly threatened flora, fauna and ecological communities. The National Threat Abatement Plan for Dieback Caused by the Root-Rot Fungus *Phytophthora cinnamomi* (Threat Abatement Plan) was released in 2001 (Environment Australia 2001). See page 29 for further details.

A national project has been funded by the Commonwealth Department of Environment and Heritage to develop:

- national best practice benchmarks for the management of sites that are, or could be, threatened by *P. cinnamomi*;
- risk assessment criteria and a system for prioritising management of sites that are, or could be, threatened by *P. cinnamomi*.

This project is considered one of the most significant actions to be implemented from the national threat abatement plan to date. The process is being undertaken by the authors and guided by an expert panel of land managers, planners and policy makers representing all states and territories, except the Northern Territory, where responsibility or interest in the management of lands that are, or could be threatened by *P. cinnamomi*. Approximately 300 stakeholders, from all states and territories, will receive the best practice document in May 2005 and be given four weeks to comment on it.

The Commonwealth Government admits in the national threat abatement plan that due to competing demands from other environmental threats, there will never be sufficient resources to protect all natural assets under threat from *P. cinnamomi*. Consequently, we are also developing a national process for risk assessment to identify and rank assets of high conservation value for priority management. This risk assessment report evaluates criteria and models for assessing the risk of infestation of the pathogen *P. cinnamomi* based on a literature review of previous studies and information obtained from current studies, unpublished information and expert opinion. We are using the results of the review and evaluation to develop models suitable for assessing the risks and consequences of infestation of *P. cinnamomi* in Australia. Spatial models combine an assessment of the risks of infestation to areas with risk assessment methods for ranking species, communities, and areas. Spatial models in which risk is mapped at different scales are critically reviewed. Models have been developed that will enable flora/fauna species, communities and areas to be ranked according to the risk of *P. cinnamomi* and the ability to manage the risk, and prioritised for management.

The models are designed to be practical tools to assist land managers in making decisions on the risks from *P. cinnamomi* and deciding the priorities for management and recovery actions. With input from land managers in the states...
and territories, the models will be applicable nationally and at state and local levels and scales. They are due to be completed in August 2005 and will be published on the Commonwealth Department of the Environment and Heritage website (www.deh.gov.au).

Pratt and Heather (1973) and Pratt et al. (1973) argued that *P. cinnamomi* was not introduced into eastern Australia following European settlement because: 1) it was so widespread; 2) it had been found in a remote, apparently undisturbed area; and 3) the native flora shows considerable resistance to disease symptoms suggesting a long association with the pathogen.

Recent genetic and molecular evidence, however, indicate that there are low levels of genetic diversity in Australian populations (both on the west coast and east coast), which is consistent with an introduced organism and rarely seen in active, widespread indigenous organisms (Linde et al. 1999; Dobrowolski et al. 2002). The isolation of *P. cinnamomi* in soil from a remote part of the Budawang Range of south-eastern NSW (reported by Pratt et al. 1973) also does not mean that the pathogen pre-dates European settlement. Logging, cattle grazing and gold prospecting had occurred in the catchment of the Budawang Range sampled by Pratt (Pratt et al. 1973; Routley and Routley 1974).

The current evidence does not prove that *P. cinnamomi* was recently introduced into NSW. It does strongly suggest that this is the case though, and there is certainly no proof to the contrary. Absolute proof may be impossible to achieve but the argument is somewhat esoteric and irrelevant in a management context. Even if *P. cinnamomi* were native on the east coast of Australia, it could still be regarded as a pest requiring action. There are many examples of native Australian plants becoming pests when management regimes or agricultural practices have altered the landscape and favoured some organisms that would not be favoured under natural conditions. The relevant question about *P. cinnamomi* in eastern Australia is not whether it is native or introduced but whether it is having an adverse impact on ecosystems that are regarded as having biodiversity, cultural or economic value.

A detrimental impact from *P. cinnamomi* in NSW should not be surprising as the pathogen has been recognised for some time as the cause of occasional but significant patch death in *Eucalyptus sieberi* forest on poorly drained sites.

If you have any enquiries about this national project please contact Dr Emer O’Gara at Murdoch University on: Email: e.ogara@murdoch.edu.au; telephone: 08 9360 7414.

**Phytophthora cinnamomi** in eastern Australia

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The listing of *Phytophthora cinnamomi* as a Key Threatening Process in NSW may have been a surprise to many who had come to believe that this pathogen was native, at least on the east coast. But how convincing was the argument that *P. cinnamomi* is native and, whatever its origins, how big a threat is it to native vegetation here?

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