McDougall, K., Dunne, C. and Hardy, G. (2012) Phytophthora cinnamomi in Western Australia and New South Wales: differences and similarities, and lessons for better management in NSW. In: Phytophthora: understanding & responding to the threat of Phytophthora in the Greater Blue Mountains World Heritage Area. Blue Mountains World Heritage Institute, Kensington, Australia, pp 96-107.

Presentation given at Phytophthora Forum, 21 June, Blue Mountains, NSW, Australia.

Phytophthora cinnamomi in Western Australia and New South Wales: differences and similarities, and lessons for better management in NSW

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P cinnamomi: similarities & differences

	Western Australia	New South Wales
History	Probably present for at least a Century	Probably present for at least a Century
Distribution	Widespread in areas with > 600 mm rainfall ; large areas still uninfested	Widespread in areas with > 600 mm rainfall but distribution poorly known
Dispersal	Spread by vehicles, people, water, nurseries and animals	Spread by vehicles, people, water, nurseries and animals
Behaviour	Kills some plants; others unaffected	Kills some plants; others unaffected
	Field symptoms generally (but not always) interpretable	Field symptoms rarely interpretable
Entities at risk	At least 800 plant species highly susceptible and some fauna at risk	Less than 50 plant species known to be highly susceptible and some fauna at risk
Knowledge	Almost 50 years of research and survey	Embryonic but growing

Similarities & differences: conclusions

Phytophthora cinnamomi behaves similarly in NSW and WA – it kills some plants and is dispersed by the same vectors

Its cryptic nature and the lack of knowledge about its distribution and impact are significant impediments to management in NSW

So what does this mean for management in NSW and are there lessons to be learnt from the WA experience?

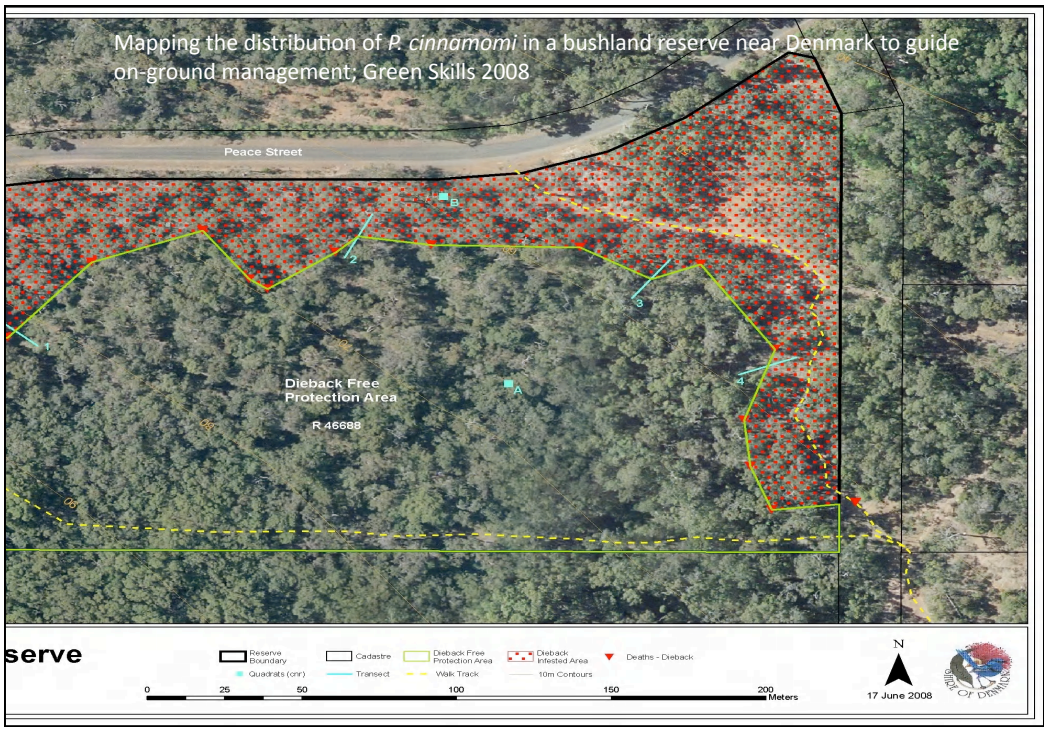
Management in WA at a local scale: planning & management of bush reserves

Knowledge required for managing *Phytophthora* at this scale:

- Guidance (e.g. http://www.dwg.org.au/index.cfm)
- Extent of infestation -
  - none = prevention
  - some or don't know = prevention + asset management
  - all = asset management or no management
- Dispersal vectors and their capacity for management
- Assets and their risk of being affected

The keys for making management work:

- Effective partnerships between land owners, managers and users
- Policies and legislation to support management decisions



Some examples of resource documents for local, on-ground management

www.dwg.org.au; www.naturebase.net; www.cpsm.murdoch.edu.au

- Management of *Phytophthora* Dieback in extractive industries
- Managing *Phytophthora* in bushland
- Managing *Phytophthora* Dieback: guidelines for local government
- Dieback treatment: Spraying & Injection
- Native garden plants resistant to Dieback
- *Phytophthora cinnamomi* and disease caused by it – 1. Management Guidelines; 3. Phosphite operation guidelines
- Primary School Education Kit

Management in WA at a local scale: Dieback Busters (http://www.roleybushcare.com/home.html)

Roleybushcare (Dieback Busters) is a non-profit community group in the Roleystone area near Perth. The group receives funding from sponsorships and government grants.

Much of its focus is on:

•Preventing spread in bushland reserves,

•Educating the community about the causes of dieback and its treatment

•Providing training so that everyone can help combat dieback

Management in WA at a local scale: eradication in Cape Arid and Fitzgerald River NPs, WA

- *Phytophthora cinnamomi* has long been thought to be ineradicable – this is now being questioned at a local scale by CPSM & DEC using a range of techniques:
  - Fencing for access control & to remove dispersal agents
  - Soil membranes to prevent spread
  - Soil fumigation
  - Soil burial
  - Plant removal
  - Phosphite application
  - Frequent monitoring
- Expensive: $50,000 - $500,000 / ha
- Highlights importance of prevention

Eradication project at Cape Arid, WA using metham sodium for soil fumigation

Management in WA at a multiple scales: *Ex-situ* conservation programs

- WA has had an *ex-situ* program of seed storage for its many rare species for over a decade
- Seed is routinely germinated and plants tested for susceptibility to *P. cinnamomi*
- The seed bank has been used to establish seed orchards of species at risk from *P. cinnamomi* and to reintroduce plants to wild sites unaffected by *P. cinnamomi*

Threatened species orchard for species sensitive to *Phytophthora cinnamomi* near Porongorup, WA

Management in WA at a regional scale: **Project Dieback** – integrated management

From the Project Dieback website: http://www.dieback.net.au/

Project Dieback is a Natural Resource Management initiative to protect environmental, social and economic values through:

- **Strategic mapping** of dieback in 5 million ha of vegetation
- **Risk analysis** identifying priorities for management
- **Hygiene planning** and protocols for adoption by local government
- Effective information and **communication tools**
- Universal dieback (interpretive) **signage system**
- Strategic **regional management plans**
- An **Integration Framework** to provide a mechanism for cross-regional delivery

Management in WA at a state scale: **Dieback Working Group** (www.dwg.org.au)

- Member organisations includeGovernment, Industry, NRM groups, Landcare, Universities and community groups.
- Aims to
  - increase awareness and understanding about dieback;
  - encourage the adoption of dieback prevention and management policies
  - encourage the implementation of management procedures to minimise the spread and impact of the pathogen.
- DWG has
  - developed management plans for high conservation value bushland reserves
  - provided advice & support for the use of the phosphite
  - conducted training & awareness raising activities
  - developed best practice guidelines for industry.

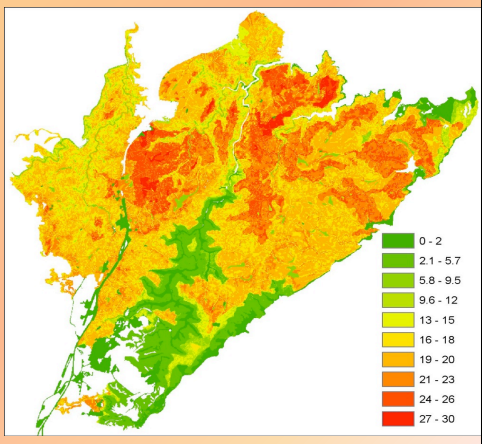
- So, overall in WA there is an effective management network and a good level of knowledge and expertise that, with adequate funding, can reduce the current and future impact of *P. cinnamomi*.
- What is there in NSW?

Management in NSW at a local scale – Mount Imlay National Park (near Eden)

- *Phytophthora* discovered in late 1990s
- Clearly killing many species and maybe contributing to decline in *Eucalyptus imlayensis* (just 5 genetic individuals)
- Popular walking track bisects the infestations
- Hygiene and visitor information provided
- Phosphite injections and spraying to protect iconic species

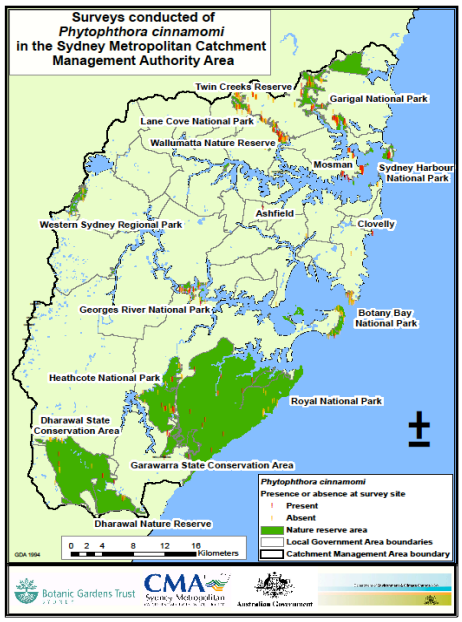
Management in NSW at a local scale – Royal National Park

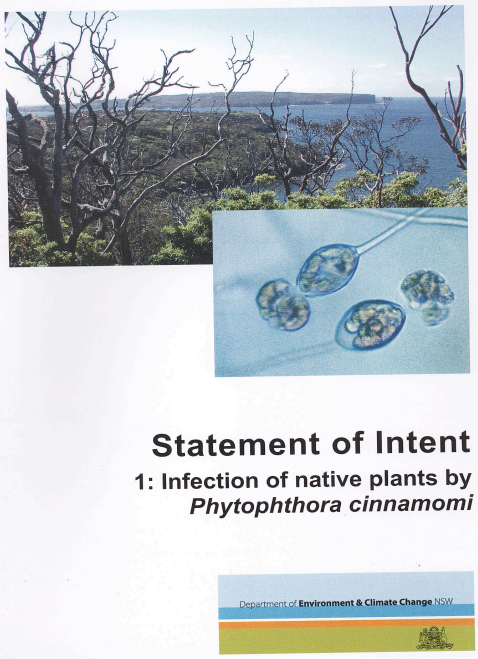
- Pc widespread in Royal NP, a very popular reserve on the outskirts of Sydney
- Many walking tracks and roads makes management difficult
- A systematic survey of Pc along walking tracks combined with available information on species susceptibility has allowed the development of a risk model



Management in NSW at a regional scale – Catchment Management Authorities

Several CMAs have funded catchment-wide surveys for Phytophthora and the development of regional best practice guidelines





Management in NSW at a Statewide scale

Score card for management of *Phytophthora cinnamomi* in NSW

- Pros:
  - Good attempts at management at a local scale given limited resources and lack of knowledge
  - Good start at a regional scale to learn more and prioritise action
  - Good framework at a state scale to direct management
- Cons:
  - Lack of knowledge of distribution and impact
  - Lack of links between the management scales
  - Little community engagement

So, will it take NSW 30 years to catch up to WA and can we afford it?

NO & YES

Inexpensive investment for better management of *P. cinnamomi* in NSW

- Systematic testing of rare, iconic and threatened species
- Training for land managers
- Strategic sampling in conservation reserves
- Landscape modelling
- Targeted awareness programs
- A *Phytophthora* information network; Φnet
- Greater collaboration with other States managing *Phytophthora*