



Where does Phytophthora occur?

It is not known where or when *Phytophthora* was introduced to Australia but it now occurs in most states.

Phytophthora has been identified in bushland on the northern shores of Sydney Harbour and is likely to have been there for some time.

Dieback caused by *Phytophthora* is a national problem that is listed as a 'Key Threatening Process' under the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* and the NSW *Threatened Species Conservation Act 1995*.



Above: The green headlands of Sydney Harbour

Cover: extensive dieback possibly caused by *Phytophthora*

For More Information

You can download a fact sheet on *Phytophthora* from the Royal Botanic Gardens, Sydney website at www.rbgsyd.nsw.gov.au and follow the links to 'info about plants' then 'pests and diseases'.

The following organisations are acknowledged in the preparation of this brochure:

Manly Council

www.manly.nsw.gov.au

Mosman Council

www.mosman.nsw.gov.au

North Sydney Council

www.northsydney.nsw.gov.au

Parks Services Division, Department of Environment & Conservation

www.nationalparks.nsw.gov.au

Royal Botanic Gardens, Sydney

www.rbgsyd.gov.au

Sydney Coastal Councils Group Inc.

www.sydneycoastalcouncils.com.au

Sydney Harbour Federation Trust

www.harbourtrust.gov.au

Taronga Zoo

www.zoo.nsw.gov.au

The University of Sydney

www.usyd.edu.au

Willoughby Council

www.willoughby.nsw.gov.au

What vegetation is vulnerable to *Phytophthora* in Sydney Harbour Bushland?

Many species of plants are susceptible to *Phytophthora* infection. Around Sydney Harbour, the following tree species are most noticeably affected, particularly in gullies and wet areas:

Angophora costata (Smooth-barked Apple)

Eucalyptus botryoides (Bangalay)

Eucalyptus gummiifera (Red Bloodwood)

Eucalyptus piperita (Sydney Peppermint)

Xanthorrhoea media (Grass Tree)

Produced by the Sydney Harbour
Federation Trust, June 2004.

Printed on 100% recycled paper.

Phytophthora

and Vegetation Dieback in
Sydney Harbour's Bushland





How does Phytophthora spread?

Phytophthora spreads naturally in the soil or in flowing water, such as stormwater runoff.

People and animals can also spread *Phytophthora* when they move infected soil or root material, such as:

- in earthworks, by bringing infected soil to a site or soil attached to machinery;
- in bush regeneration activities such as replanting, revegetation and weeding;
- in bushwalking, on boots, clothing etc.

How can I stop the spread of Phytophthora?

Don't take soil into or out of bushland areas. Remove any soil from clothes or shoes before you enter and leave the bush.

Disinfect shoes with a spray of Household Disinfectant.

When in the bush, keep to designated walking tracks. Avoid using tracks during and after wet periods.

Don't disturb or remove plants, soil or rock from bushland areas (which is illegal anyway).



What is being done about Phytophthora?

The *Sydney Harbour Dieback Working Group*, including Local, State and Commonwealth Government land managers in the Sydney Harbour region, has been set up to coordinate efforts at the regional level. The group is developing guidelines to address issues such as bush access and track design, hygiene protocols for bush regenerators, tree injection, as well as raising awareness of the problem within the broader community.

Studies are being undertaken to determine where *Phytophthora* occurs and what actions can be taken to control it. A management strategy is being implemented that includes:

- an education campaign to inform people how they can prevent the spread of the pathogen;
- improving stormwater runoff and other environmental factors, such as nutrients and contamination, that increase the impact of *Phytophthora*;
- guidelines for the design and construction of walking tracks, including boot cleaning stations at entry and exit points;
- implementation of best practice procedures for people undertaking bush regeneration activities;
- specific controls for contractors who have the potential to spread *Phytophthora* (including sterilising equipment & machinery and use of *Phytophthora* free soil and fill);
- mapping and monitoring infected and uninfected areas and dieback;
- new plantings with *Phytophthora* resistant species in infected areas;
- the use of a plant defence activator (eg potassium phosphonate) on plants that are infected but are still able to recover.

What is Phytophthora?

Phytophthora cinnamomi (pronounced Phy -toph-thora) is a water mould that thrives in warm moist soils and attacks the roots of susceptible plants. It causes the roots to rot, making them unable to absorb water and nutrients. This may lead to plant dieback and death. Dieback simply means dying plants.

Early symptoms include wilting, yellowing and drying-out of leaves. The young feeder roots, and sometimes the larger roots, may go dark.

Around Sydney Harbour you may have noticed areas where there are groves of dead trees or live trees with leaves dying from the tips of the branches down. This is dieback.

There are many causes of dieback and often dieback may be the result of several factors, of which *Phytophthora* is one. Other factors include increased nutrients and altered soil moisture from stormwater runoff, insect attack, soil compaction around tree roots, and altered fire regimes.

Phytophthora is not harmful to humans or animals.



Left and Above Left: Angophora trees and grass trees are susceptible to *Phytophthora*.

Above right: Controls are being implemented to assist bush regenerators.

Next page: Shoe cleaning can prevent the spread of *Phytophthora*.

