



Maintaining Forest Health

(IFA Forest Policy Statement Number 1.5)

Key statement

Increased public and private sector funding is needed to improve the capacity to manage for production and sustainability of forest values through research, education and training that takes into account the major long term challenges to forest health.

The Issue

There are many threats to forest health that can affect their commercial and environmental values, including biodiversity. These threats include biological factors such as weeds, animals, insects, fungi, viruses and physical factors such as drought, flooding and fire. While forests are adapted to tolerate some level of these biological and physical threats, excessive levels or incidences can cause damage and disease. Plantations are especially susceptible to disease. The threat is particularly high for exotic pathogens and pests to which there maybe only a low natural level of tolerance. Anthropogenic climate change may exacerbate these threats.

Background

This section provides referenced examples of existing and potential threats to forest health in Australia covering the range of factors described above. The section also briefly describes the risks arising from increased use of plantations for wood production and the need for regular forest health surveillance.

The cinnamon fungus (*Phytophthora cinnamomi*) is an example of an introduced pathogen that caused widespread damage to eucalypt forests in temperate regions of Australia after being first identified in various parts of Australia in the 1960s (Newhook and Podger 1972). Considerable research was required to identify the cause, to develop management strategies to control spread and to identify resistant tree species for reforestation of damaged areas (Cahill *et al.* 2008). These management strategies, including monitoring procedures, are now effectively controlling spread and limiting damage in affected areas.

Guava rust (*Puccinia psidii*) is an established complex of pathogens in the Americas but is not currently present in Australia (Simpson *et al.* 2006). If introduced, this fungus could devastate *Melaleuca* and many other taxa from the plant family *Myrtaceae* across tropical and sub-tropical regions of Australia. *Phytophthora pinifolia* has caused widespread mortality of *Pinus radiata* in Chile (Duran *et al.* 2008). Casuarina blister bark disease caused by the fungus *Subramanianospora vesiculosa* is causing serious damage to stands in Africa, South and South-East Asia (Narayanan *et al.* 2003). Lymantriad moths, including gypsy moth, *Lymantria dispar*, also pose a serious threat (MAF 2008). These pathogens and insects illustrate the need for border biosecurity protocols and systems but also the need for preparedness to react to detection of new pathogens and pests.

Australia's forests are adapted to fire regimes ranging from frequent, low-intensity to infrequent, high-intensity. This adaptation is shown in features including bark, presence of dormant buds and lignotubers, seeds and seed pods (Florence 1996). Changes to fire frequency following the agricultural and urban settlement of Australia have necessitated changes in fire regimes to protect crops, homes and people. Attitudes to public forest management have also caused changes in fire regime. These changes have implications for forest health (Bartlett *et al.* 2007). Inappropriate fire frequency can change the distribution and density of some species with an overall decline in forest health and resilience.

Riverine forests and wetlands, including the red gum (*Eucalyptus camaldulensis*) forests of the

Murray-Darling basin floodplain, are adapted to natural cycles of flooding and drying (Dexter *et al.* 1986). The regeneration and health of the plant species and their dependent birds, fish and other animals depends on those cycles. Dam construction and regulation of river flows to supply water to irrigate agricultural crops and for industrial and urban use affects those cycles, reducing or increasing the frequency and changing the duration and seasonality of flooding.

Government policies in Australia have for many years encouraged the development of commercial timber plantations as a complement and or substitute for timber production from native forests. Plantations now produce around two-thirds of the timber products used by Australians. Cost-effective commercial timber production in plantations typically requires that a narrow range of species and genotypes be selected. As well, natural control factors may be missing or less effective than in native forests. Plantations are therefore more susceptible to damaging disease and pests than native forests.

Monitoring of forest health is a typical feature of forests managed for wood production. Forest health surveillance involves the formal inspection of planted and natural forests by trained observers to assist the early detection of developing pests and disease problems. Australian state forest services have undertaken surveillance for pathogens, insects and symptoms of poor forest health for many years.

Forest industry biosecurity planning involves the identification and minimisation of risks posed by exotic pests through actions such as exclusion, containment, eradication, and control. The '*National Plantation Timber Industry Biosecurity Plan*' is aimed at reducing the risk posed by exotic organisms to the plantation timber industry through exclusion, containment, eradication and control.

Policy

Professional foresters, managers of forests of all tenures and the public need to be educated about forest health issues. All forest managers should apply systems of forest health surveillance and implement strategies to control the spread and impacts of threats to forest health.

Maintaining forest health depends on forest health managers taking appropriate action not just understanding the impact of natural and human activities on forest ecosystems. Global trade has increased the need to protect plants and forests from exotic pest incursions. This requires rigorous application of pre and post border biosecurity protocols. Forest managers must understand and apply a wide range of scientific research and expertise. For example, epidemiologists who study the dynamics of pest and pathogen populations, entomologists who study the ecology of particular groups of insects, and pathologists who study plant diseases caused by pathogens.

Integrated planning, at the national and local levels, is required to deal with existing, new and potential forest health threats through prevention, surveillance and rapid response. Effectiveness of the '*National Plantation Timber Industry Biosecurity Plan*' relies on adequate funding and collaboration by all stakeholders, including government agencies, industry, and the public.

Production forests have species in common with conservation, urban and amenity forests. Exotic pests and pathogens will most likely enter and establish near international sea and airports near urban areas. It is therefore essential that forest health managers maintain close linkages with people responsible for care of urban and amenity trees. Forest health management needs to be an integral part of the continuum of health management in Australia (Beale *et al.* 2008). This will help to ensure that Australia maintains an effective diagnostic capability.

Australia can improve its capacity to maintain forest health by investing in research, education and training that takes into account long term challenges to forest health. The urgency for action is made more acute by the current decline in specialist and practical forest management expertise and the unknown rate and degree of future climate change effects. Action will require public and private sector funding into research and management capability addressing forest health.

The Institute of Foresters of Australia (IFA) advocates a national commitment to actively manage threats to forest health such as invasive insects and pathogens, invasive plants and animals, and inappropriate fire and water management.

The IFA supports and encourages:

- coordinated implementation of the ‘*National Plantation Timber Industry Biosecurity Plan*’ recognising the continuum of health management in Australia
- systematic implementation of regular forest health surveys
- appropriate silvicultural practice and prescribed burning programs to maintain forest health

The IFA considers that:

- increased public and private sector funding is needed to improve the capacity to manage for production and sustainability of forest values through research, education and training that takes into account the major long term challenges to forest health.

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