Australia's State of the Forests Report
Case studies

Criterion 3
Maintenance of ecosystem health and vitality

Case study 24: Guava rust

Although guava rust (*Puccinia psidii*) has not yet been detected in Australia, it is of considerable concern. This pathogen affects a broad range of species in the Myrtaceae and Heteropyxidaceae families, including eucalypts. It has spread from its former range in South and Central America, the Caribbean and Florida to Hawaii, where it was reported in April 2005. By December 2005, it had been found on all but one of the Hawaiian Islands. This incursion has increased concerns in Australia, where the introduction of the disease could have serious repercussions for biodiversity conservation, timber production and horticulture.

Guava rust can be a problem in nurseries, on young trees in the field, on coppices and on shoots in clonal gardens. In Brazil, flooded gum (*Eucalyptus grandis*) – widely planted by the cellulose and paper industry – has proved highly susceptible to the disease. Guava rust is also relatively common in *E. grandis* plantations in Argentina, while in adjacent Uruguay it has been recorded on native Myrtaceae and severe damage was reported there on blue gum (*E. globulus*) in 2002. However, the disease appears to damage only young trees in the South American eucalypt plantations. Moreover, the industry has developed genotypes that are almost fully resistant to the disease, and clonal techniques have enabled the adoption of those genotypes in the plantations that sustain the major pulp industries.

Infection of young growing shoots and leaves by guava rust can cause shoot death, defoliation and the death of young trees. In Brazil, this has resulted in reduced growth and poor form in plantation seedlings and the loss of almost entire plantings. If this rust becomes established in Australia, it is unlikely to kill mature native trees, but seedling death may result in a reduced rate of regeneration of dominant species in natural forests, thus affecting biodiversity. Coppice regrowth is highly susceptible. Planned and unplanned fire and storms, which promote coppice and epicormic shoot growth on older trees, will make mature trees more susceptible to the disease. Australia's expanding eucalypt hardwood plantation industry, an emerging agribusiness of leaf oil production, species grown commercially for their flowers, and garden ornamentals are all at risk.

A forestry, rural and urban biosecurity plan for guava rust has been prepared by Australia's Office of the Chief Plant Protection Officer in the Australian Government Department of Agriculture, Fisheries and Forestry. The plan includes chapters on diagnosis and field detection, quarantine zones, selection of control treatments, destruction and eradication options, and containment strategies. Options for eradication and containment include host removal, chemical control, biological control, physical control (heat and fire) and imparting host resistance through breeding. The widespread and dense occurrences of the Myrtaceae in areas climatically suitable for infection will complicate any eradication or containment measures. The current emphasis is therefore on an enhanced public awareness campaign and on quarantine measures to prevent entry of the disease into Australia.

Source: Unpublished internal BRS report, 2007

Case study 25: Pine pitch canker

Pine pitch canker (*Fusarium subglutinans* forma specialis *pini*) is a serious fungal disease of pine trees; radiata pine is highly susceptible. First identified in North Carolina, United States, in 1946, the fungus was reported on radiata pine in California in 1986. Since then it has become widespread in most parts of the southeastern United States and has killed many thousands of trees. It has also been found in Mexico, Haiti, Japan, South Africa and Spain. So far, Australia remains free of this disease, but it would pose a considerable threat to Australia's pine plantations if it became established here, particularly as there are no fungicidal or other treatments that are effective in controlling the disease.

The first symptoms of infection include yellowing of the needles and wilting and dieback of the branch tips. The needles eventually turn red and drop from the tree. Cankers (lesions) may appear on the main branches or trunk. The cankers exude resin, often in copious quantities. Significant crown dieback may occur if multiple branch tips are infected. Female cones on infected branches often abort before reaching full size and fail to open.

Since August 2003, Australia has had a pine pitch canker incursion plan in place. The plan comprises elements on preparedness, detection and notification, response decision, eradication implementation and containment.

Source: http://www.daff.gov.au/aqis/quarantine/pests-diseases/forests-timber/pine-pitch-canker (accessed July 2007)

Case study 27: Tumut fire salvage operations

In December 2006, fire burnt more than 11,500 hectares of multiple-use public forest near Tumut, New South Wales, including over 8,000 hectares of *Pinus radiata* plantation. Fire-affected timber needs to be harvested within a few months because burnt timber degrades and loses its commercial value rapidly. Therefore, Forests NSW immediately dedicated its entire contracted harvest and haulage resources in the region to the salvage operation.

Forests NSW, the local mills and more than 20 harvesting and haulage contractors worked together to ensure the success of the recovery plan. Additional harvesting and haulage operators were sourced from as far away as Queensland.

As a result of this combined effort, 75% of the salvageable logs were harvested, significantly mitigating the potential financial effects of this plantation fire for Forests NSW and the local community.

Salvage logging of pine plantation following 2006 fire, Tumut, NSW.

Source: Forests NSW

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