

Port Surround monitoring for exotic forest insects.

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Background.

The establishment of exotic forest and timber insects is a major concern to land managers. The economic, aesthetic, and environmental impacts to forest industries and urban tree managers have been devastating in many countries around the world. There is a need for a monitoring system to provide early warning of the presence and possible establishment of new insect pests. Current experience is that once established for more than two years eradication and containment is very difficult. Interceptions of exotic timber insects have increased markedly with the rapid increase in trade especially with Asian countries. A system has been developed, tested, and costed appropriate to Tasmania.

Path of pest entry and establishment.

Port area. Entry of cargo into any entry port provides a transport mechanism for the arrival of exotic pests and diseases. In recent times extra emphasis has gone into the examination of pallet wood, packing crates and airport warehouses as pathways and centres of biotic invasion. Despite the high levels of inspection the movement of some exotic insects out of entry port areas is inevitable.

Port surround area. An area of 5 km radius of the entry port site which may consist of high intensity buildings in cities to rural agricultural zones. In urban areas large numbers of trees and shrubs comprising a wide range of species, especially exotic species, are present in parks, street trees and gardens. In rural areas blocks of native bush, hedgerows and planted shelterbelts consist mainly of native tree species.

It is the experience in New Zealand, Canada, and United States it is within this 5 km zone around port of entry sites that initial establishment of exotic pest species occurs. It is also the case that if containment within this area is not achieved within two years of establishment then eradication is not possible. In Australia there is no formal monitoring for the detection of exotic forest insects within this entry zone.

Plantations. In many parts of Australia forestry plantations have been established within or close to the 5 km radius zone of entry ports. Often this is a practical decision for movement of commodities to and from ports. Establishment of a pest species within the port surround area provides a pathway for rapid movement into the plantation estate and severe economic consequences for the forest industry.

Current System of inspection and survey.

AQIS emphasis is on port area/cargo/container inspection. High level of inspection and interception.

Urban Port Surveillance. No formal surveys conducted except for the national Asian Gypsy Moth project. Monitoring for Asian Gypsy Moth *Lymantria dispar* conducted at all entry ports in Australia. Cost of monitoring in Tasmania \$16600.00 for 2003/04. In Tasmania a total of 120 traps placed at Burnie, Devonport, Bell Bay, Triabunna and Hobart.

Plantations – Forest Health surveys conducted in softwood and hardwood plantations involving aerial, drive through, and walk in techniques.

Native Forests. No formal surveys conducted.

Some exotic insect species which threaten trees in Australia.

Asian Longhorn Beetle. (*Anoplophora glabripennis*)

Asian Gypsy Moth. (*Lymantria dispar*)

Emerald Ash Borer. (*Agrilus planipennis*)

Impact of these exotics in USA.

Asian Longhorn Beetle (ALB).

ALB entered USA in solid wood packing material from China. The beetle established in New York in 1996 and Chicago in 1999. The cost since 1997-2003 for research, control and urban tree replacement has been \$US 90 million. Estimated cost to eradicate by 2009 is \$US365 million. The chance of eradication in Chicago is high due to surveys initiated after ALB found in New York. In New York eradication is unlikely but control at low incidence level practical.

Asian Gypsy Moth (AGM).

Entry of AGM into the Pacific Northwest of North America has necessitated a \$US20 million eradication campaign. Cost for control and 'slow the spread' campaign of European Gypsy Moth in the past decade has cost \$US 40 million. Budget for 'Slow the spread' campaign for 2004-08 is \$US3.75 million.

Emerald Ash Borer.

This Asian buprestid pest of Ash species has been present for several years before damage in the form of dying trees was recorded. In the past two years some 6 million ash trees have died in the Detroit area and the incidence has expanded beyond the quarantine area. The cost of surveys to determine the rate of spread area in 2002/03 was \$1.5 million. A research budget for 2003-2005 of \$US 1.12 million was approved by Congress.

Impact of an exotic insect pest in Australia.

Red Imported Fire Ant established in the Brisbane City area over a five-year period before being detected in 1999. The current five year eradication program is budgeted at \$A140 million. In the past decade 66 species of exotic timber insects have been detected at the Port of Brisbane of which 17 are known to have become established in Queensland.

Trap monitoring systems for exotic wood borer insects

New Zealand.

A three-year (2000-2003) funded program of Lindgren trap monitoring at all port and entry cargo sites. A total of 264 traps serviced every 10 days for six months a year. Funded by MAF at \$NZ250, 000 pa.

United States of America.

Three western States (Oregon, Washington, and California) run trap monitoring at port and cargo entry sites specifically for scolytids. They hope to expand this pilot scheme to other States and to include all timber insect species. Oregon runs 160 traps during summer emergence period at 9 sites for past 5 years at a cost of \$US50, 000 pa.

Monitoring system for the detection of exotic timber insects in Tasmania.

Static trapping.

The aim of static trapping is to have a low maintenance, year round monitoring tool for the detection of exotic species before establishment. Discovery of a new exotic would necessitate an intensive trapping and survey and implementation of the GIMP process.

During 2001-2003, Forestry Tasmania has conducted port trapping trials, for exotic timber insects, at several northern seaports and Hobart Airport. Several commercial trap designs were tested and various combinations of commercial lures and pheromone attractions tested. A combination of commercial traps and lures has been selected as being the most effective for use in a port surround monitoring system.

Within the 5-km radius cargo entry sites, four sets of four traps serviced every two weeks during Oct-April and monthly May-Sept. Each set of traps comprises three Lindgren funnel traps and one vane trap. Combinations of ethanol/iposenol/pinene used as attractants. Sticky delta traps would be placed at each site for *Lymantria* spp. detection including AGM. Cost for trap purchase and first year monitoring \$18,888. Cost of subsequent year \$11,048 +GST. Traps to be placed at Burnie, Devonport, Bell Bay, Long Reach, Triabunna and Hobart.

Blitz surveys.

An intensive annual survey at each site required for pathogen detection and tree damage assessment. Forestry Tasmania conducted at the seaport of Bell Bay and at Hobart Airport blitz surveys in 2002-03. Cost of blitz survey in Tasmania assessed at \$4936 per site including diagnostic costs. In New Zealand blitz surveys are conducted seven times a year at Auckland Airport at a cost of \$NZ 34333 in 2002-03. (\$NZ 4905 per survey). In 1999-2000 AFFA funded a Port and Airport Environs survey at five Queensland entry ports. The cost of this intensive trial survey was \$A 26718. (\$53436 per site with extensive travel costs).

An option to Blitz surveys is the establishment of sentinel planting plots. A sentinel planting consists of small plots of varied tree species pruned to 3 metres. These plots enable rapid examination for herbivorous insect species such as aphids and psyllids and observation of disease symptoms. Two or three sets at each site containing three trees of each selected species. Would include commercial timber trees and dominant urban tree species. This technique has not yet been trialed or costed. Would be maintained as part of entry port landscape program and be sampled monthly.

Proposal.

Some species of exotic timber insects would have a devastating economic impact on the forest industry and other land management agencies if they became established in Australia. The cost of eradication or control of any damaging exotic insect would be millions of dollars added to the loss of resource. It is now recognised in countries such as Canada, United States and New Zealand that early detection is the vital key in preventing huge economic and resource losses. Early detection within the 5-km zone around port entry sites enables eradication to be attempted and containment measures to be initiated under the Generic Incursion Management Plan (GIMP). Placement of traps within plantation and nursery areas would provide a further early detection zone specifically targeting exotics of orchard and forestry trees.

Forestry Tasmania has developed the methodology and expertise to implement a port surround monitoring system for Tasmania. Agriculture, Fisheries and Forestry-Australia (AFFA) who have provided some funds for project development support this scheme. AFFA regard the development of the scheme in Tasmania as a pilot for a federally funded Australia-wide system. Forestry Tasmania is prepared to provide expertise in trap establishment, and technology, and a diagnostic capacity. Ownership and issues of fund management should be handled by a committee within or by the Forest Health Advisory Committee.

Funding and participation is required from stakeholders, recognising the protection of trees in Tasmania from the threat of exotic insects, to establish the monitoring system at all port of entry sites in Tasmania.

Industry acceptance of the development of trapping technology for detection and monitoring of exotic timber insects.

In 2003 I was awarded a forest industries Gottstein Fellowship to examine the use of static traps as a tool for the detection of exotic timber insects of economic importance. I travelled to Canada, USA and UK in June 2003 . A report of the study tour is posted at the Gottstein web site entitled 'The use of static traps for the detection and monitoring of exotic forest insects.'

www.gottsteintrust.org.

In February 2004, I was contracted as a consultant to the Queensland Forestry Service to establish a static trap monitoring program for the softwood plantations in Queensland. The first traps are now in place and the area covered will be progressively covered as finance permits. Currently five forestry blocks are being operationally monitored for the early detection of new exotic timber insects and to determine the distribution of established exotic species.

I have been awarded a RIRDC travel grant to present a paper on quarantine trapping technology at the IUFRO Conference 'Forest Diversity and resistance to native and exotic pest insects' to be held in New Zealand in August 2004.