Wandoo Recovery GROUP

Department of Conservation and Land Management
Conserving the nature of WA

Bulletin No.3 December 2005

Introduction

The Wandoo Recovery Group (WRG) was formed in February 2003 by the Minister for the Environment, Dr Judy Edwards, in response to community concern about wandoo's failing health.

The WRG's role was to investigate the causes of crown decline and develop appropriate strategies and actions.

This bulletin is the third in a series developed by the WRG. The aim is to communicate information about wandoo crown decline, research the problem and acknowledge the activities of the WRG. This bulletin focuses on communication and public participation, as well as providing a brief update on research progress.

Background

Wandoo (*Eucalyptus wandoo*) is a widespread and ecologically significant tree species of south-western Australia. It occurs in State forests and conservation reserves, as remnant bushland and roadside vegetation, and as paddock trees on private farmland. However, since the mid-1980s many wandoo trees and woodlands have suffered deteriorating health, as demonstrated by a noticeable decline of the tree crown.

Likely causes

Land clearing, decreased annual rainfall, changes in nutrient levels, increasing salinity and less frequent mild fire are likely contributing factors. Wood-boring insects are considered as a secondary rather than primary cause of the problem, at this stage.

Crown decline characteristics

It is the wood boring insects, however, that cause the 'flagging' which signifies the first indication of failing tree health. The leaves on the upper and outer branchlets turn brown and start to die off. Later, epicormic shoots (new foliage) begin to sprout along the trunk and lower branches. These epicormic shoots may also die, resulting in progressive downward loss of the tree canopy and sometimes death of the tree.

Another form of wandoo decline is characterised by the sudden death of large branches and main stems of the tree. Symptoms are caused by different wood-boring insects that ring-bark the tree.

Flagging is where the leaves on the upper and outer branchlets in the tree crowns die.

The Wandoo Recovery Group

WRG members include representatives from the Department of Conservation and Land Management, Department of Environment, Forest Products Commission, Water Corporation, WorldWide Fund for Nature, The University of Western Australia, the York Land Conservation District Committee, and the general community. The Group has prepared, and is implementing, its Wandoo Recovery Action Plan.

Our focus

The WRG focuses on four priorities:

- **communication**, to be achieved through an ongoing public education program;
- **research**, to identify the causes of decline;
- **mapping**, to accurately determine the extent, frequency and severity of decline; and
- **building partnerships** with other organisations and community groups.

Epicormic shoots (new foliage) sprouting along the lower branches.

Communication and public participation

Because of the broad extent of wandoo's natural range, the WRG recognises the need for an extensive communication program. A communication plan has been developed with an emphasis on public participation. Activities include:

- community information days and bus trips at York, Narrogin, Dandaragan and within the Helena catchment;
- WRG presentations to regional and local environmental committees;
- the preparation of a series of news bulletins which have been widely circulated. Articles about wandoo have appeared rural newspapers, CALM publications and NRM newsletters; and
- continued surveying and mapping to determine the extent and severity wandoo crown decline using volunteers.

Information days and bus trips

Helena catchment

Three bus trips within the Helena catchment and at York gave community participants the chance to learn more about wandoo crown decline and research investigations.

Dandaragan

In April 2005, the WRG, together with the West Midlands Natural Resource Group, co-hosted a successful information day at Dandaragan, focusing on wandoo and marri (*Corymbia calophylla*).

Public forum

In June 2005, the WRG hosted a public forum on wandoo crown decline. The Minister for the Environment opened the forum and acknowledged the importance of finding practical solutions to address the issues of wandoo crown decline. A review of possible causes and progress on current research was presented and discussed. Ideas generated from the forum were communicated back to participants and further considered at a Wandoo Science Workshop in July.

Above: Roger Underwood (WRG member) explains aspects of wandoo crown decline to community members during a field trip to York and the Helena catchment.

Left: Wandoo information day at Dandaragan.

Research

Research by The University of Western Australia is focusing on the relationships between crown decline, environmental stresses, tree physiology, and the activities of a wood-boring insect and associated fungal pathogens.

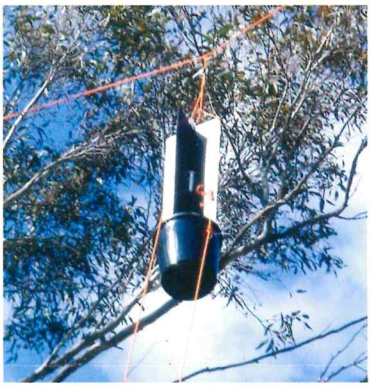
Environmental studies (*Ecophysiological* research)

A team led by Dr Pieter Poot is assessing whether wandoo is more vulnerable to drought than some of its co-occurring eucalypt species (jarrah, marri and powderbark). The water relations of these four species are being studied in the Julimar Forest. Additionally, 'sapflow' probes installed at a number of sites continuously monitor the movement of water through the trunk of trees. Pure stands of wandoo, powderbark, jarrah, marri, and a mixed species site are being investigated. Initial results indicate that, of the four species, wandoo tends to be the biggest water user. Particularly during summer, wandoo trees close their leaf stomates (stomata) to a lesser extent than the other species. This causes them to experience the strongest drought stress.

Sapflow probe.

Glasshouse studies are testing the salt tolerance and drought tolerance of 30 geographically distinct wandoo populations. Results indicate a large variation in salinity tolerance amongst populations. This information will also be useful for future landcare projects.

Above: Ryan Hooper erecting his canopy insect traps on wandoo in the Helena catchment.



Right: Close up of canopy insect trap.

Insect and fungal studies (*Phytopathological* research)

Ryan Hooper (PhD student), is studying the relationship between the activities of a woodboring insect known as T1 borer (family *Buprestidae*) and associated fungal pathogens that have been found on decaying portions of wandoo branches. Investigations are under way at 10 sites within the Helena catchment. Samples from decaying branches are being analysed. Fungal isolates are being catalogued and inoculation trials will start in autumn 2006. Some branches have been placed in incubation cages to allow the larvae to complete their life cycle. When hatched, the adult insects will be used to study the insect biology and life cycle.

Relations between populations of *Buprestid* beetles and the severity of damage in declining wandoo canopies are being examined. Surveys have been conducted to assess crown condition, identify decline 'hotspots' and map the distribution of 'flagging'. Results show wandoo in the lower Helena catchment to be a 'hotspot' with T1 borer active in these areas. Forty per cent of trees in a range of age classes and decline stages showed flagging. Canopy insect traps, targeting T1 borers have been installed. Special instruments are monitoring changes in canopy microenvironment and local-site conditions.

Wandoo assessment guide

The WRG has developed a simple survey procedure to assess crown decline in wandoo trees. Results of surveys will help determine the geographic extent and severity of crown decline, and its progression over time. The data will be collated by the WRG and made available for research and monitoring. Information gained will provide knowledge that is locally informative and compliment a broad scale mapping project being undertaken by CALM.

A Green Corps team and volunteers have successfully used the procedure to survey the severity of decline at sites within the Helena catchment and at Wongamine Nature Reserve near Toodyay. Training and assistance will be given to community groups and individuals who would like to monitor the health of wandoo in their local area.

How you can help

Help is required to assist research into wandoo crown decline.

Volunteers are needed to help set insect traps, collect samples and survey wandoo trees for crown decline.

Surveying wandoo trees for crown decline is simple and fun to do.

Other news

A wandoo web link to CALM's NatureBase website will provide information about wandoo crown decline, research and WRG activities.

More information

For further information on the work of the WRG and how you can help, contact the Executive Officer, Liz Manning on 0427 441 482 or email lizmanning@bigpond.com.

Ryan Hooper can be contacted on (08) 6488 7175 or at hooper01@tartarus.uwa.edu.au.

Dr Pieter Poot can be contacted on (08) 6488 2491 or at pieterp@plants.uwa.edu.au.

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