Wungong Whispers

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Flora and Fauna Monitoring in the Wungong Catchment



Photos courtesy of Colin Terry

Establishing baseline data on flora and fauna in trial areas has been a priority for the Wungong project, to ensure that any impacts, whether positive or negative, are accurately monitored.

The Water Corporation has engaged consultants Kabay Rehabilitation, Environmental and Biological Consultants (fauna) and Mattiske Consulting Pty Ltd (flora) to develop a suitable monitoring program.

The initial focus of the monitoring program is to measure any changes in native forest habitat throughout the 12 year trial. Additional data will be collected in areas that were mined and rehabilitated as well as in four sites across stream zones.

There are 10 sites for flora monitoring and six of them are overlapped with fauna plots to see if any integrated changes are occurring in flora and fauna habitats. All plots are located in dieback-free forest. All have been logged previously, but some decades ago and none have been burnt within the last five years.

Out of the six fauna plots, two plots are untreated controls, two plots will be logged by the Forest Products Commission in 2007 as part of their normal commercial operations and two will be thinned by notching as part of the Wungong trial.

Several sets of baseline data have been collected on each plot which record the forest structure, crown cover and density. Sub-plots have also been established to record the presence, abundance and cover provided by the existing understorey plant species.

Trapping is being used to record species and abundance of fauna including reptiles, mammals and invertebrate fauna such as ants, spiders, springtails and beetles. Observations are also being made on the bird species present.

The baseline data from the initial monitoring program will be made publicly available once the consultants' reports are finalised. Initial analysis shows a low species richness for mammals (3), reptiles (6), birds (18) and understorey plant species (9-10). Ants were more diverse with 29 species recorded.

Some two to three years after treatment (thinning or commercial logging), all the plots will be remeasured to determine any changes or impacts.

Wungong Consultant Receives Forestry Award

Jack Bradshaw, a consultant to the Water Corporation on the Wungong project, has been awarded a prestigious national medal for forestry.

The medal is awarded as the Institute of Foresters of Australia highest and most prestigious honour for outstanding service to the profession of forestry in Australia.

Jack was commended for his contribution over the last forty years and has excelled in the areas of native forest silviculture and community education.

Jack's expertise and experience in forest management is currently being used to develop tree thinning prescriptions for the Wungong project.

INSIDE

Impacts of wildfire on terrestrial invertebrates in water catchments

Research into the impacts of an intense wildfire on terrestrial invertebrates in the Mundaring catchment has found that following a major disturbance, pioneer species quickly re-establish themselves, many in large numbers, but there tends to be fewer species. Later, as other species colonise the area, the number of individuals fall but the biodiversity (variety of species) becomes greater.

The study, conducted by Chantelle Jackson from the University of Western Australia as part of her honours thesis, investigated the effect of an intense wildfire on terrestrial invertebrates within the riparian zone of streams, one and a half years after the fire. Chantelle conducted pitfall trapping of surface active invertebrates at ten sites, five sites each located in areas either burnt by wildfire or prescribed burnt 1-2 years prior to the study*.

A variety of environmental variables were measured to identify which factors were contributing to the change in the terrestrial invertebrate communities. A total of 1,535 individuals were collected, representing 65 different types of invertebrates. Springtails were by far the most abundant group, encompassing 67.6% of the total number of individuals and ants were the most diverse group.

The abundance of individuals was significantly higher in wildfire sites, and there was also significant variation between sites. The species composition also differed significantly between sites burnt by wildfire and those by prescribed burning. Thrips and a particular type of ant (Dolichoderidae) were far more abundant in wildfire sites, while another type of ant (Myrmicinae) was more abundant in sites that had undergone a prescribed burn.

Impact of wildfire on the Mundaring-Darkin River in the Mundaring catchment- January 2005.

The invertebrate communities sampled within wildfire areas appear to be a subset of those sampled in the prescribed burn areas. The environmental variables which possibly contributed to this difference were the amount of leaf litter, the distance of the study site from the stream and the percentage of canopy cover greater than two metres.

The study was supported by the Department of Water and the Water Corporation.

** The areas that were prescribed burnt 1-2 years prior were not affected by the wildfire as the reduced fuel load in these areas allowed for successful suppression.*

Demonstration Sites

The Water Corporation, in partnership with the Shire of Serpentine-Jarrahdale, the Department of Environment and Conservation and the Forest Products Commission is in the process of establishing two demonstration sites. The first will demonstrate seven different types of forest management practices in 60 year-old regrowth jarrah forest. A further five forest management techniques will be displayed in 14 year-old bauxite pits rehabilitated with jarrah-marri by Alcoa World Alumina.

The sites will provide an opportunity for interested parties to see how the forest looks after different treatments and will also be used for monitoring and research purposes. On completion, these sites will be open to the public and will demonstrate forest management practices for different purposes (eg. commercial logging, thinning to improve water yield and others).

It is anticipated that the sites will be ready for conducted tours by spring 2007. Visitors will also be able to take self-guided tours of the areas, assisted by maps and information points explaining the different management practices.

More information on these sites and the different thinning treatments used will be made available as the project progresses.

The demonstration sites will show the different stages of forest management. Below, a regrowth forest and an actively managed forest (right).

Innovative Technology to Improve Catchment Management

The Premier's Water Foundation has awarded $900,000 to a project led by the CSIRO to improve understanding of how forests adapt their water use and structure to changing climate and forest cover.

The project will attempt to represent the interactions between water yield, vegetation structure and ecology and how these are affected by forest thinning and fire management. This study will be carried out in Wungong catchment and will be integrated with the reseach and monitoring projects being conducted as part of the thinning trial.

It will apply innovative analysis techniques to historic data collected in several gauged catchments in the jarrah forest over the past 30 years and use 25 years of Landsat (satellite) images to examine the relationships between water yield, vegetation disturbance, type of rainfall events, and catchment characteristics. This analysis will be combined with intensive monitoring using new technologies to measure vegetation characteristics and water use at selected study sites.

The project aims to improve understanding of the dynamics of vegetation and catchment water yields in response to climate change and will enable improved management for both water yield and forest ecosystems.

An enhanced vegetation and water balance model will then be used to forecast the impact on forest structure and stream yield under several climate change scenarios based on work by the Indian Ocean Climate Initiative.

The research project is a partnership between CSIRO Land and Water, Mathematics and Information Sciences, Ensis (a joint venture between CSIRO Forestry and Forest Products and Scion, New Zealand Forestry), the Department of Water, Department of Environment and Conservation, Water Corporation and Alcoa.

The Wungong Catchment. Photo courtesy of Colin Terry.

DID YOU KNOW ... About the Wungong Catchment?

The Wungong catchment covers an area of 12 845 hectares and while containing a number of different vegetation complexes, is dominated by open jarrah and marri forest, most of which is comprised of State Forest.

The earliest involvement by the traditional owners, the Noongar people, would have included travel through the area, hunting and a form of fire-stick burning practice.

The town of Jarrahdale, just outside the current catchment boundary, was established in 1872 to service a local mill and logging within the catchment area.

Mining for bauxite commenced near Jarrahdale in 1963 and extended into the catchment by the late 1960s.

Mining continued within the catchment until 1998 when the Jarrahdale mine was decommissioned and a total of approximately 2500 hectares rehabilitated.

A small pipehead dam was established on the Wungong River in 1925 and the existing 60 gigalitre Wungong Dam became operational in 1979. On average, based on post-1975 rainfall patterns (which have seen less rainfall), streamflow into the Wungong Dam is around 13% of total rainfall in the area.

Meet the Team!

The success of the Wungong project relies on the hard work and expertise of many people in the Department of Environment and Conservation (DEC).

DEC is the State Government agency with responsibility for the State forest in the Wungong catchment. The Water Corporation and DEC are working together to administer and manage the Wungong Catchment Environment and Water Management Project.

This issue introduces you to a few key players at DEC. The Water Corporation would also like acknowledge DEC staff Paul Jones, Mike Meinema, Dr Martin Rayner, Ian Freeman and Troy Fullerton and his team for their assistance with the Wungong project.

For enquiries relating to DEC's activities within the Wungong catchment contact Richard Boykett, DEC's Project Coordinator on 9423 2900 or by email at richard.boykett@dec.wa.gov.au.

Alan Walker
Director,
Regional Services

Alan Walker is the Director of Regional Services at the Department of Environment and Conservation. Recently Alan has been closely involved in the development of the Department's Good Neighbour Policy, Fire Management Policy and interagency representation regarding thinning trials in the Wungong Catchment.

Alan has worked mostly in the south-west in his 36 years with the Department at locations including Dwellingup, Collie and Manjimup. He was a Regional Manager for Warren Region (five years) and Swan Region (three years).

Steve Gunn
Operations Officer

Steven Gunn is the Operations Officer for the Wungong Project in the Department Of Environment and Conservation. He is responsible for the coordination and programming of work for the project.

Steven is a graduate from Murdoch University and University of Western Australia and has worked in Collie and Dwellingup in his 12 years with the DEC.

He has spent most of that time working in Sustainable Forest Management, in particular jarrah silviculture and fire management. Recently Steve has worked on dieback forest rehabilitation and mine site rehabilitation management in conjunction with Alcoa Australia.

Dr Geoff Stoneman
Manager,
Forest Policy and Practices

Geoff Stoneman is Manager of the Forest Policy and Practices Branch of the Sustainable Forest Management Division in the Department of Environment and Conservation (DEC).

In terms of the Water Corporation's Wungong project, the Forest Policy and Practices Branch has the role of endorsing the silvicultural guidelines to be used in the catchment. Geoff is a DEC representative on the Technical Reference Group for the Wungong project and a member of the Steering Committee for the Premier's Water Foundation project on vegetation dynamics and water yield (see page 3).

Welcome to ...

Richard Boykett, Project Coordinator, Department of Environment and Conservation

Richard Boykett has been engaged by DEC's in the role of Wungong Project Coordinator. In this role he will provide the key point of contact between Water Corporation project staff and DEC, including the planning and implementation of the onsite works.

Richard's background with the former Department of Conservation and Land Management and the Botanic Gardens and Parks Authority gives him a sound background in planning and management of activities on environmentally sensitive land. Most recently he has worked at Transfield Services where he was responsible for contracting and project management of research activities and field works on the Department of Defence's behalf.

Michael Loh, Senior Engineer, Water Corporation

Michael has recently started in the role of project coordinator for the Wungong Project at the Water Corporation. He has been involved with water efficiency studies and in particular, his work on the Domestic Water Use Study has been used Australia wide by other water authorities.

Michael also lectured in Hydrology and Water Resources Engineering at RMIT University in Melbourne for over 5 years. Prior to that, he work with Melbourne Water where he was involved with the Catchment Hydrology Research Programme, including a study into the effect of bushfire on water yield in Mountain Ash Forest.

Contact Details

This newsletter is produced by the Water Corporation and is also available electronically at **www.watercorporation.com.au/wungong**. To subscribe or unsubscribe to this newsletter, please contact Louisa Kinnear, Communications Officer on **9420 3139** or email **louisa.kinnear@watercorporation.com.au**. For technical enquiries, please contact Bishnu Devkota on **9420 2042** or email **bishnu.devkota@watercorporation.com.au**.

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