

Wungong

Whispers



Volume 12 – May 2011



**images have not been altered. Aerial shots were taken between 11:40am and 12:30pm*

Lack of water causing drought deaths

On April 15, 2011 two Wungong Catchment Trial project members went for an aerial observation of the forest in Wungong.

The data collected on depleting ground water levels (GWL) rang a bell as we witnessed trees dying together in patches. These included 150-200 year old trees that have deep established roots.

Drought deaths to approximately 5-10% of the forest was seen, with many other parts yellow and stressed. Stressed vegetation included the healthiest part of the catchment, around the reservoir.

Trees have been known to lag in their response to water level drops, which suggests the situation may be worse than what is apparent.

Actively thinned areas were healthier than adjacent areas indicating more favourable GWLs and soil moisture.

This also confirms the 2009 finding where thinned areas in Cobiac displayed higher GWLs.

The control plot of the Trial's demonstration site showed greater signs of drought stress than the thinned plots.

The Chandler Road image (above) shows the thinned side of the road on the left having healthy canopies as opposed to the vegetation deaths on the right that were not thinned.

Although soil levels differ here, the event is enough to suggest the forest has reached a threshold.

Trees are displaying dire mechanisms in order to survive. Evidence of abscission was seen, where the tree quickly sheds its branches with a 'clean cut' action in a last effort to save itself.

The Trial's modification to thin to a more water-affective prescription is currently under review.

Project Director, Chris Botica says, "Knowledge from this Trial may assist in understanding mechanisms to limit these tree deaths and produce a positive water result"



After careful safety instructions Frank Batini was strapped in and ready for take off over Wungong.



West of Haul Road No 1: deaths here are seen in mining rehabilitated areas facing NNE spanning a vast area.

Will water revive dead trees?

Forest experts Frank Batini and Ian Freeman agree that growth may restart at the collar level as coppice shoots by next year, however these will also die if we have another dry winter.

This is in contrast to stressed live trees where foliage regrows at canopy level.



An example of coppice shoots off Chandler road which formed when the trees died in 2007. In this image taken last month, the coppice appear to have also died.

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Beyond Wungong widespread tree deaths raise concern

As well as the tree collapses in Wungong, some members within organisations such as Murdoch University, CSIRO and Department of Environment and Conservation have expressed concern regarding widespread drought deaths in other areas of the northern jarrah forest.

Throughout March and April it wasn't only Wungong that saw colour changes in its ever-green forests. Significant native deaths were observed in Serpentine and Dwellingup.

The phenomenon is in sync with the deaths at Wungong, primarily along the Darling Scarp and in

areas with shallower soils such as on slopes and around rock surfaces.

However Wungong's healthiest parts around the reservoir showed signs of moderate stress.

Conservation Parks like at Monadnocks (Eagle Hill, Mount Randall) and surrounding areas also appeared severely stressed.

While the project team continues with the Trial it is becoming more apparent that knowledge from this small Trial may assist in understanding a big issue.

Dr Giles Hardy put it well in the April 20 issue of the West Australian (p.22); the trees are indeed warning us.



Above: Drought deaths in Dwellingup are extensive along the scarp (DEC image)



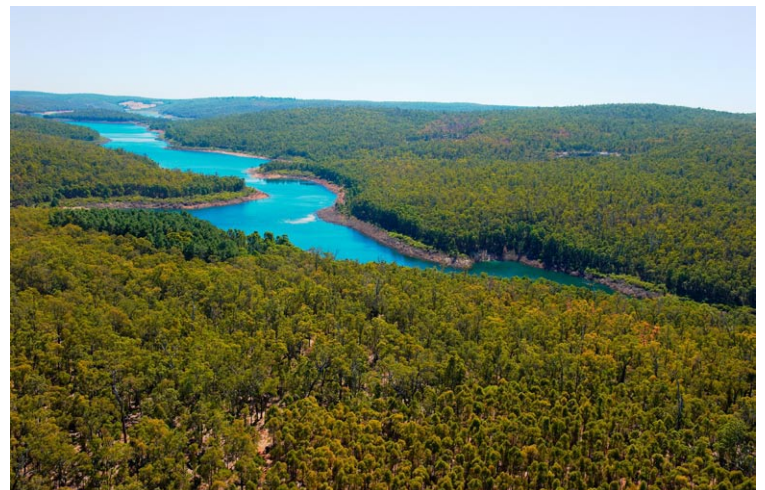
Above: left Control plot of Demonstration site (37m/ha) displayed signs of stress and abscission. Right Thinned plot of demonstration site (thinned to 12m/ha) was healthy.



Above: Drought deaths in Serpentine catchment.



Above: Old growth deaths in the Wungong catchment. Deaths appear vast and widespread.



Above: Wungong Gully; the healthiest part of the catchment shows yellowing canopies and some deaths

Plant pathology report will include stream-side deaths

On May 10th, Project Manager Michael Loh and Consultant Frank Batini accompanied experienced plant pathologist Dr Elaine Davison and retired forester Phil Shedley for a Wungong site visit.

Although occurrences like this have been predicted by WEC-C modelling, this was the first time drought deaths of Bullich trees in a stream zone has been observed by the team in the field.

They visited many tree death sites which Dr Davison confirmed were as a result of drought.

Samples were also collected for laboratory analysis. A report will be prepared by Dr Davison which will be posted on the Wungong website.

A major discovery was a small patch of dead and drying Bullich trees (*E megacarpa*) at the head of a protected stream reserve (right).



Research forum moves community forward

On the 18th of November 2010, the annual Wungong Research Forum was held at City West Receptions.

Hosting 100 guests, thirteen professional researchers from organisations such as CSIRO, the Department of Water, Murdoch University and UWA, shared the latest findings of the Trial.

The forum stimulated discussions about ways to manage the sustainability of the region's streams and biodiversity in light of research.

The forum progressed to a new level from previous years. The first forum in 2006 brought researchers and professionals together to better

understand one another, their undertakings and current research about catchment management.

Research began to progress and the 2007 and 2009 forums involved a high level of technical activity; discussing ways to improve methods and knowledge.

In 2010 more technical discussions took place, however it developed into a focus on what the community would like to do going forward. That is, what to do with the science and data that has been gathered so far.

It was noted that the climate trend has progressively become drier over the last 115 years and ground water levels in areas such as Wungong have dropped upto 22 metres since the 1970's.

Discussions acknowledged that the jarrah forest we know today will change in light of current trends. It is not a question of if, but when it is that trees will reach their threshold.

There was an expressed need to develop an overall vision for the forest. That is, coming up with a plan which answers questions like: Under today's conditions, what levels of water, biodiversity and conservation do we want for the benefit of the future?

The event received unanimous positive feedback and ended with a sense of understanding that the science is giving a clearer picture of the situation, working together is key to recovering and sustaining streams in the northern jarrah forest.

Sharing the knowledge Wungong tours continue

Touring the catchment and discussing the Trial's latest findings has been our main priority the last few months.

As we await approval from the Conservation Commission for the Trial's modification,

site visits have been conducted with DEC, Department of Water's Midland group, Specterra and Murdoch's Centre of Excellence in Climate change.

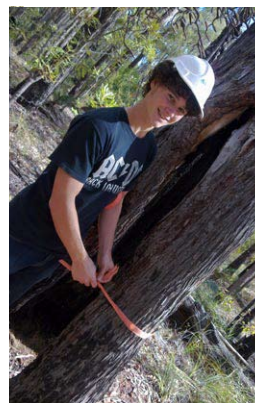
Visiting UK professor Neil Coles and Professor Mike Bonell from UWA

also came to investigate the Wungong Catchment Trial.

Trips included enlightening practical exercises with environmental undergraduate and post-doctorate students from Murdoch and Curtin.



Left: Sitting on an open rock site, Dr Richard Bell and Keith Barret discussing the drought death issue.



Left: Curtin undergraduate students in a tree-marking exercise. Students were appreciating the challenge of managing a catchment for water.



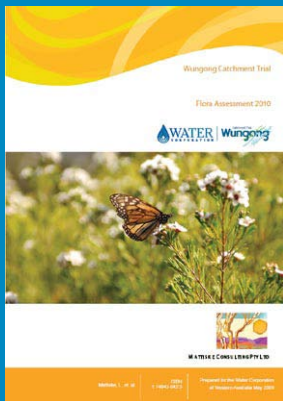
Far left: Qui Song, Bernie Dell and Richard Bell from Murdoch University

Left: Curtin students taking notes as DEC's Ian Freeman answers their questions.

Flora report sets the scene

Last month Mattiske Consulting released the 2011 vegetation assessment report for the plots at Curtis road, Bedfordale, located in Treatment Area 4 of the Wungong catchment.

This baseline, pre-treatment study set the scene and status of the area to allow comparisons if future thinning takes place.



The study included the status of biodiversity in dieback versus dieback-free areas of the plot.

In October 2010, both disease and disease-free areas were considered stressed to slightly stressed respectively.

Given the condition of the forest at the moment the Wungong team hope these plots can be improved if selective thinning takes place in the future.

The study is a continuation of the 2009 flora report where an additional six plots have been measured.

These plots include two controls in Conservation Park, two in Treatment Area 1 subsection 3 and two close to the demonstration site off Jarrahdale road.



Above: Post 1988 mining rehabilitated areas near rock slopes

We are now discussing with Mattiske Consulting the possibility of remeasuring these plots three years after they were thinned.

Investigations into other parameters for the 2011 report, relevant to the drought events will also be discussed.

TEAM UPDATE

Congratulations Frank!

Forestry consultant Frank Batini has been invited to Chair the Board of Centre of Excellence for climate change, woodlands and forest health at Murdoch University for a period of two years. The team congratulates him as he continues his work with us while he embarks on this new opportunity.

Michael ange-Loh

Project Manager Michael Loh returned this month from his three week European holiday. Michael toured Paris and Rome and specially enjoyed the Doria Pamphilj museum. Welcome back Michael, we are green with envy.

Calendar update

- | | |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| January 2011 | New look for Wungong Catchment Trial publications |
| February 2011 | DEC Environmental Management Branch field trip
Specterra Wungong catchment tour |
| March 2011 | UWA Wungong catchment visit
Department of Water, Midland group visit
CSIRO presentation to Water Corporation
Murdoch University, land management tour |
| April 2011 | Murdoch University professors visit
Project team investigates Wungong forest health
Aerial shots of the catchment
Curtin University, land management tour |

Contact details

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