

# Research in the Wildfire Chronosequence Project

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The Wildfire Chronosequence Project is a collaborative project between Forestry Tasmania and the University of Tasmania, with funding from the Bushfire CRC. Using a set of twelve permanent reference plots situated along a chronosequence in wet eucalypt forest of southern Tasmania, the project aims to investigate successional changes in forest structure. There is a particular focus on how a single catastrophic wildfire affects structural diversity, physical processes (eg. biomass accumulation, and nutrient cycling) and succession of biodiversity in wet eucalypt forest over a time-scale measured in decades or centuries. This research aims to inform forestry and conservation by contributing to the development of better ways of managing structural complexity and fire-dependent biodiversity in the landscape.



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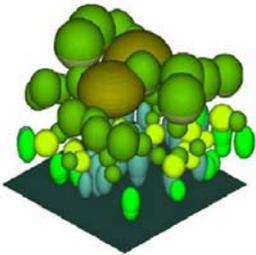


Fig. 1. Canopy model from Scanlan (2007). South facing wildfire plot, burnt in 1934, southeast isometric view. • *Acacia dealbata*, • *Atherosperma moschatum*, • *Eucalyptus obliqua*, • *Eucalyptus obliqua* (senescent), • *Nematolepis squamea*, • *Nothofagus cunninghamii*.



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## Completed research

### *Cryptogamic diversity on coarse woody debris.*

Browning, B. (2006). Honours thesis, University of Tasmania, Hobart.

This study investigated temporal change in bryophyte communities on coarse woody debris. Species diversity changed significantly with forest age.

### *Successional patterns of terrestrial bryophytes along a wildfire chronosequence in the wet eucalypt forests of southern Tasmania.*

Hodge D., Pharo, E.J., Dalton, P.J., Turner P.A.M. (2006.) (submitted to *Tasforests*).

This study found significant change in composition with increasing stand age. However, with the exclusion of younger forests these differences were less distinct.

### *A methodology for modelling canopy structure. An exploratory analysis in the tall wet eucalypt forests of southern Tasmania.*

Scanlan I. (2007) . Honours thesis, Australian National University, Canberra.

This methodology resulted in the creation of a spatial model of canopy structure using field data (genus, dbh and stem position) (Fig. 1). The methodology will be used as a means to 'ground-truth' remotely sensed data (such as LiDAR), and to hence map and monitor forest structure at the landscape level.

### *Variation in coarse woody debris attributes in Tasmanian tall wet Eucalyptus obliqua (L'Herit.) forests and implications for its monitoring.*

Sohn J.A. (2007). Unpublished Hons. Albert-Ludwig Universität, Freiburg, Germany.

Using the detected patterns of CWD attributes, the study recommended that 'based on subplot (0.01 ha) level analyses, a 50 m X 50 m plot size was adequate for capturing the local range of CWD volume and decay class diversity'. This result is important for future monitoring and detection of CWD in a production forest landscape.

### *Stand-replacing wildfires? The incidence of multi-aged and even-aged Eucalyptus regnans and E. obliqua forests in southern Tasmania.*

Turner P.A.M., Balmer, J. and Kirkpatrick, J.B. (2008). Submitted to *Forest Ecology and Management*.

An analysis of a large research plot data set from southern Tasmanian forest found over half the stands studied were multi-aged. The research found that modifications of forestry regimes and efforts to prevent frequent landscape-scale fires in wet eucalypt forests could help to maintain the existence of these biodiverse multi-aged forests in the landscape.



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## Current research

### *Using macrofungal diversity as a tool in sustainable forestry management with special reference to the ectomycorrhizal species on soil and wood-inhabiting species on coarse woody debris.*

Gates, G. PhD. Candidate. 2005 – 2008. University of Tasmania, Hobart

This study is currently being written up. One finding is that each of the studied four plots has a distinct macrofungal assemblage, which is largely attributed to strong relationships with associated vascular plants, and hence to some extent with stand age.

### *Exploring stand structure in Tasmanian wet eucalypt forests*

Scanlan, I. PhD. Candidate, 2008 – 2011. Australian National University, Canberra.

This study will explore potential associations between on ground measurements or overstorey and understorey components with LiDAR.



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## Future research

### Beetles

Long-term responses of litter-dwelling beetle assemblages to wildfire and comparisons with forest harvesting

### Bats

Long-term responses of bats to wildfire and comparisons with forest harvesting

## Want to be part of this?

Further collaborative research with individuals/agencies and associated with the Wildfire Chronosequence Project is encouraged. If you are interested, go to the project web-site [http://www.warra.com/warra/research\\_proj\\_FTicon.htm](http://www.warra.com/warra/research_proj_FTicon.htm) and select the Wildfire Chronosequence benchmark project.