

Wildfire Chronosequence Project

Dr Perpetua Turner

Postdoctoral Research Fellow, School of Plant Science, University of Tasmania, Tasmania



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The southern Tasmanian wet eucalypt forest landscape consists of a mosaic of multi-aged forest primarily established from natural disturbance (e.g. wildfire) and/or timber production (clearfelling, regeneration burning). However, suppression of wildfire and current timber production management prescriptions may be oversimplifying the structural complexity of these forests, increasing the potential for loss of biodiversity and reducing the incidence of late successional forest in the landscape.

Funded through the Bushfire CRC, the Wildfire Chronosequence Project focuses on a combination of permanent and non-permanent sites to investigate stand structure in wet eucalypt forest. Sites are stratified across 6 treatments (old growth mixed forest, forest burnt by major fire years [1898, 1934, and 1966-or 1967] and silviculture [clearfell burn and sow logging of 1966-or-1967 and +1990's]) and 2 aspects (north to west and south to east). Stand structural data will be collected from these sites.

The project aims to inform forestry and conservation of methods to better manage for structural complexity and fire-dependent biodiversity. The establishment of permanent sites provides scope for additional research projects, such as the following collaborations between the University of Tasmania and Forestry Tasmania.

Ms Genevieve Gates

PhD. Candidate, School of Plant Science, University of Tasmania

Macrofungal biodiversity as a tool for the sustainable management of coarse woody debris in the forest

Macrofungi are important in the interaction of living organisms in wet eucalypt forest but are often ignored when assessing changes in biodiversity.

This project aims to provide baseline information to:

- indicate the potential role of fungi in the dynamics of forest ecosystems and
- to monitor the changes effected by disturbances, both natural and artificial, to such ecosystems

Research questions include:

- Will there be changes in species richness and species diversity with time and site, log diameter, or decay class?
- How will the fungal community on the CWD change with time?
- How will findings from this study affect current management prescriptions?

The impact of time since wildfire will be explored for changes at a macro level on the fungal communities that form an integral part of these forests. The project includes mapping coarse woody debris within four permanent plots and subsequent surveying for epixylic macrofungi. Surveying will extend over 2-3 years. Data obtained will be valuable for long term monitoring and landscape management decisions.



Dr Emma Pharo¹, Mr Paddy Dalton², Mr Daniel Hodge^{1,2}, Ms Jamie Toliver¹ ¹School of Geography and Environmental Studies, ²School of Plant Science, University of Tasmania

Investigating bryophyte response along a wildfire chronosequence in the Southern Forests

These 3rd year student projects aim to look at habitat availability and sampling methods for bryophytes both inside and outside of a 50 X 50 m area of forest

Research questions:

- How does bryophyte diversity differ between undisturbed forest and forests burned in 1966-7, 1934 and 1898, and
- What structural features and bryophyte diversity are being missed by focusing on plot-based sampling?

Bryophytes are among the most responsive plants to changes in microclimate and habitat structure. They also usually contribute greater species diversity in wet eucalypt forest compared to vascular plants. An understanding of spatial variation within a stand is important, and so is documentation of temporal variation. Sampling is usually restricted to replicated plots of > 75 m², which may not contain key bryophyte habitats. To assess the range of habitats available for bryophytes, sampling will encompass a range of techniques and focus on a detailed account of few plots. The current project and work stemming from it will make a substantial contribution to the literature and our understanding of the dynamics of a large proportion of the plant biodiversity in these southern Tasmanian forests.

Ms Belinda Browning

Hons., School of Plant Science, University of Tasmania

The role of logs in maintaining bryophyte diversity along a wildfire succession in wet eucalypt forest of Tasmania

This project aims to provide a quantitative account of bryophyte species diversity and abundance from logs of a particular decay class over time.

Research questions:

- To describe the bryophyte species composition and succession on logs in wet eucalypt forest.
- To investigate bryophyte relationships with variation in log diameter and forest age

Wildfire is highly variable and is likely to leave logs of various diameters on the forest floor and/or standing dead/alive trees which in turn may become logs. Current silviculture management prescriptions and rotation times do not allow for a similar retention of coarse woody debris. An understanding of the bryophyte species diversity of logs is important both from an ecological and biodiversity perspective. This project will contribute to furthering understanding for the future management of bryophytes and logs.



Emma Pharo



Paddy Dalton

