ESTABLISHMENT OF A SET OF WILDFIRE CHRONOSEQUENCE BENCHMARK PLOTS IN SOUTHERN TASMANIA

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Aim

- To investigate successional processes in the fire-adapted wet eucalypt forest landscape of southern Tasmania
- To enable the development of methods for managing structural complexity and fire-dependent biodiversity in the production forest landscape and adjacent protected areas

Permanent plots - creating a benchmark

- 12 permanent research plots- six disturbance treatments X 2 aspects [N(-W); S(-E)].
- Each plot is 50 x 50 m plot (with 100 m external buffer, Fig. 1)
- Each plot conforms to strict selection criteria.
- Treatments (Fig. 2) include:

▲wildfire regrowth forest derived from single wildfire events (1898, 1934, 1966/67)
▲oldgrowth forest (no wildfire for over 150 years)
▲silvicultural regeneration forest derived from clearfell, burn and sow (1966, 2000).

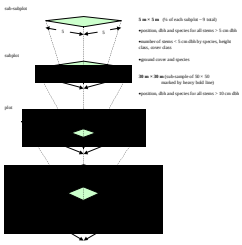

Fig. 1. Plot design

Plot location

- All in southern Tasmania
- Six are within the Warra Long Term Ecological Research (LTER) site (http://www.warra.com/warra); the remaining six are within an adjacent area of State Forest recently designated as an Experimental Forest Landscape

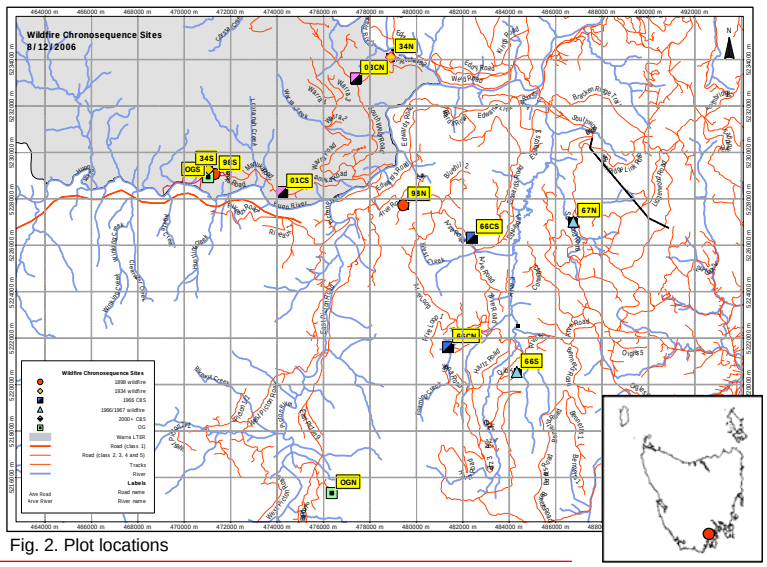

Fig. 2. Plot locations

Forest structure and wildfire

Data on coarse woody debris (CWD) and vertical structure (standing live and dead vascular plants) have been collected from the six S-E sites with complementary data collection from the six N-W sites pending. Two current projects are outlined below.

1. Modelling successional changes in foliage structure in the mixed forests of Tasmania.

Ian Scanlan (Figure 4), Australian National University.

Aims:

- To derive an index of the vertical distribution of foliage within a given area
- To apply index methodology to an existing LiDAR dataset and investigate relationships between ground-based and remotely-sensed data.

Fig. 4. Ian Scanlan measuring tree diameter

Preliminary results:

- Analyses in progress.
- 1966 clearfell S and 1967 wildfire S shared very similar structure (Figure 5), although there were more 'legacies' from the previous stand in the wildfire plot.

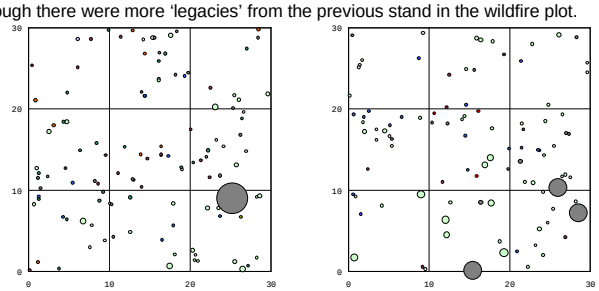

Fig. 5. Stems (>10 cm diameter) within 1966 clearfell S (left), and 1967 wildfire S (right). Grid 10 X 10 m. Different tree species are represented by circle symbols of different colours (E.obliqua is grey); circle diameters are proportional to stem diameter. © Ian Scanlan.

2. Quantities and condition of coarse woody debris in tall wet Eucalyptus obliqua *forests following harvesting or wildfire disturbance.*

Julia Sohn (Figure 6), University of Frieburg, Germany.

Aim: To provide information on the quantity and quality of CWD following (a) wildfire and (b) clearfell burn and sow, along a chronsequence

Fig. 6. Julia Sohn and Zach Pompa measuring log diameter

Preliminary results:

- Analyses in progress.
- Plots has 233-410 individual pieces of CWD.
- Regardless of plot age, most CWD pieces are in the smallest diameter class (10-29 cm), but most of the total CWD volume is contributed by pieces in the larger diameter classes (90-209 cm).
- Oldgrowth S plot has the most CWD (902 m^3 ha^{-1}), while the 1898 wildfire S plot has the least (350 m^3 ha^{-1})
- Nearly all CWD is in decay classes 3-4 (out of 5) in every plot, but in the oldest plot (oldgrowth S), there is a greater preponderance of later decay classes (DC4 and 5), while in the youngest plots (1966 wildfire S and 1967 clearfell S) there is a greater preponderance of an earlier decay class (DC2).

Future directions: Stand structural assessment using Light Detection And Ranging (LiDAR)

- There is potential to expand upon projects and look at the use of LiDAR at the landscape level.
- Future proposed projects include the collection of LiDAR data and further validation of LiDAR data with field-based records of vertical structure.

Want to know more or to be part of this project?
The Wildfire Chronosequence Project has seen collaborative research by many individuals/agencies. Further collaborative research is encouraged. Interested individuals/agencies should contact Simon.Grove@forestrytas.com.au or Perpetua.Turner@utas.edu.au.