

Mapping High Conservation Value Forests in Eastern Victoria

Research Fact Sheet

Forests, Fire and Regions Group invests in the Integrated Forest Ecosystem Research Agreement (IFER) with the University of Melbourne (UM), which delivers critical science projects to support policy and operational practices. The core research themes of IFER include biodiversity, carbon, hazards, socio-economic, vulnerability and water. 'Mapping high conservation value forests in Eastern Victoria' is a Landscape Vulnerability supplementary project. The project commenced in October 2018 and is due to be completed by March 2020.

The Project

Mapping the location and density of high-conservation value forests, such as ecologically mature forests and rainforest, with the assistance of LiDAR (light detection and ranging) measurements, provides the foundation for long-term monitoring programs and management strategies.

As part of the Regional Forest Agreements (RFAs) modernisation project, the Department of Environment, Land, Water and Planning (DELWP) have commissioned comprehensive airborne LiDAR measurements of Victoria's forests. There has been minimal mapping of Victoria's mature forests over the past 20 years and many significant events, such as bushfires, have occurred during this time, emphasising the importance of assessing the forests to determine what changes have occurred.

The *Mapping high conservation value forests in Eastern Victoria* project will collect the necessary LiDAR data to map high-value conservation forests, such as ecologically mature forests and rainforest, with greater precision than has previously been done before for Victoria's forests.

The project will use existing models to map the occurrence of rainforest and cool temperate mixed forests and to integrate a novel eucalypt cohort-aging approach- using LiDAR crown mapping to distinguish areas of old-growth forest across the forests of eastern Victoria. This will inform the current RFA planning process.

Field work will be used to calibrate and validate models across multiple forest types and to extend rainforest and mixed forest models to West and East Gippsland and from cool to warm temperate and dry littoral rainforests.

Field work will also be undertaken to extend the age cohort model from *E. regnans* to other dominant eucalypts in the region.

The measurements will provide the foundation for management strategies and long-term monitoring programs.

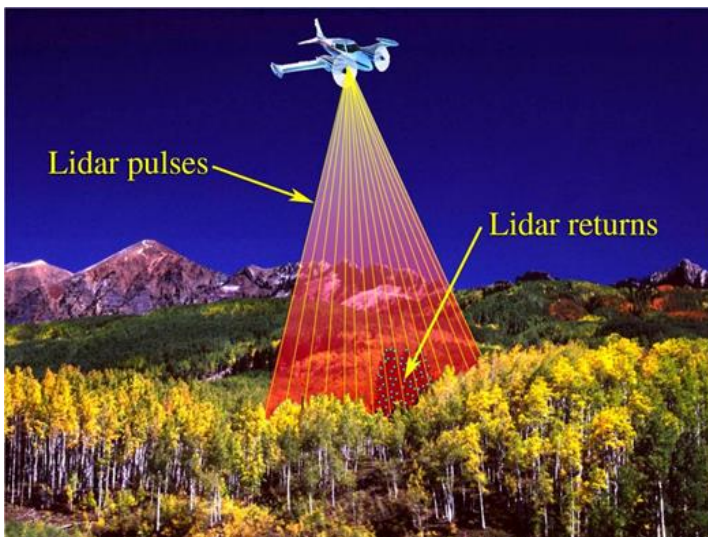


Image 1: LiDAR imaging

Photo: US Geological Survey

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Project Outputs

The project will involve three phases of data collection, covering East Gippsland, Central Highlands, North and West RFA areas (**Figure 1**). The full program will cover 4.5 million hectares of native forests and provide DELWP with datasets that provide the ecological basis for:

- estimating the area of habitat of forest-dependant fauna
- mapping of key growth stages and ecosystems for biodiversity management and conservation
- estimates of forest biomass that can be used to predict forest carbon pools and fuel loads
- predictions of forest density and diameter distributions that can inform timber harvest planning and sapwood area for water yields.

Policy and Operational Implications

The project will provide important information for supporting decision-making during the current RFA planning process. It will also improve understanding of past fire regimes on forest structure and composition.

The Research Team

The project is being led by Associate Professor Craig Nitschke from the School of Ecosystem and Forest Science at the University of Melbourne, joined by Professor Patrick Baker, Dr Sabine Kasel, Dr Raphaël Trouvé (University of Melbourne) and staff from the Department of Environment, Land, Water and Planning.

Project Status (June 2019)

To date the project has developed predictive maps for rainforests, tall trees (> 70 m) and age cohort maps for the 2015 LiDAR region (See **Figure 1**).

The age cohort mapping has identified the occurrence of single and multi-aged stands in the 2015 LiDAR region. This dataset is now being used to map giant trees (> 2.5 m DBH), ecologically mature trees (Pre-1900) and stands and is being combined with disturbance history data to map old-growth forests in the region.

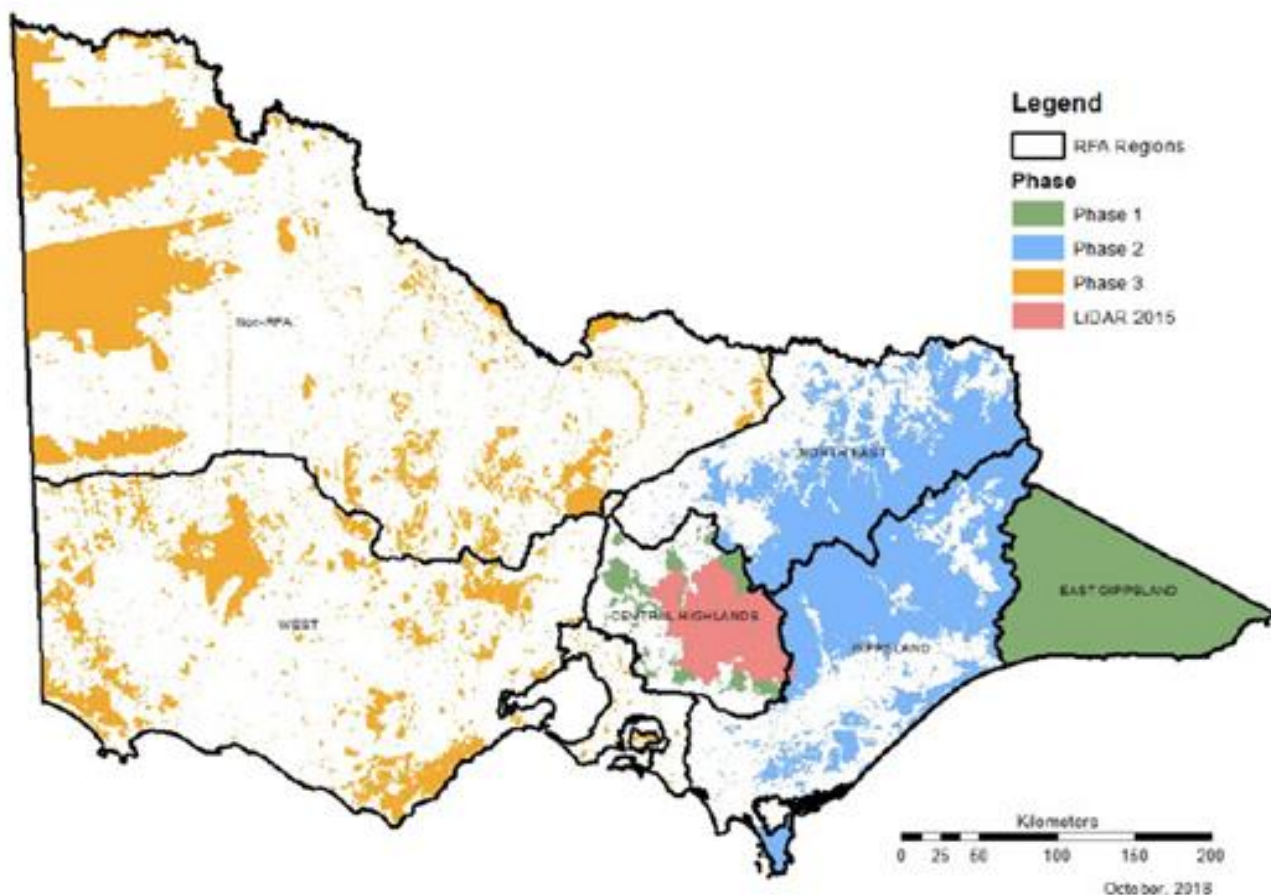


Figure 1: Proposed LiDAR measurement program