

The Integrated Forest Ecosystem Research Decision Support System (DSS)

Research Fact Sheet

Forests, Fire and Regions Group invests in the Integrated Forest Ecosystem Research Agreement (IFER) with the University of Melbourne (UM), to deliver critical science projects to support policy and operational practices. The core research themes of IFER include biodiversity, carbon, hazards, socio-economic, vulnerability and water. This Fact Sheet reports on the development of a Decision Support System (DSS) which brings together the learnings of all the core themes. The project commenced in July 2017 and is due to be completed by June 2019.

The Project

The *IFER Decision Support System (DSS) project* will build on over ten years of IFER research to develop a robust knowledge and decision support system. The DSS will enable land managers and communities to interactively explore potential changes to multiple forest values, including biophysical, social and economic values, resulting from both management interventions and other external drivers.

Decision making in forest management involves interactions between multiple forest values, uses and forest stressors. Increasingly, it requires risk and uncertainty analyses at a range of spatial scales. To address this complexity going beyond traditional decision-support tools that might provide static maps of single values, to a more sophisticated interactive system, capable of providing explicit evaluation of a wide range of indicators, representing multiple forest values is required. The IFER DSS will address this challenge by:

- Developing the capacity to robustly predict the impacts of management interventions and natural drivers, on a range of forest values at landscape scales and over multiple timeframes.

- Explicitly integrating participation of land managers and communities, as well as socio-economic values, into a collaborative scenario-based modelling process, to articulate stakeholder goals and preferences for forest management.
- Incorporating both risk and uncertainty into the model to support strategic planning.

Phase 1 of the project will use the Central Highlands as a pilot landscape, primarily due to the comprehensive data already available, and the complexity of management issues.



Image 1: Fire killed snow gums, Lake Mountain

Photo: Sabine Kasel

Project Outputs

Phase 1 of the IFER DSS prototype will provide:

- The capability to examine the effects of landscape-scale natural drivers, and of current, emerging, and alternative policy interventions, using contrasting scenarios
- Defined risk metrics (measures) relevant to multiple biophysical and socio-economic values, such as changes to water availability, species abundance and opportunities for experiencing flora and fauna.
- Outputs for risk metrics, and to support risk analyses and guided conversations with community and stakeholders about those risks (e.g. what are the percentage changes for each forest value from the scenarios?).
- Outputs that can be scaled depending on the end use (e.g. regional strategic planning process or more local community consultation).

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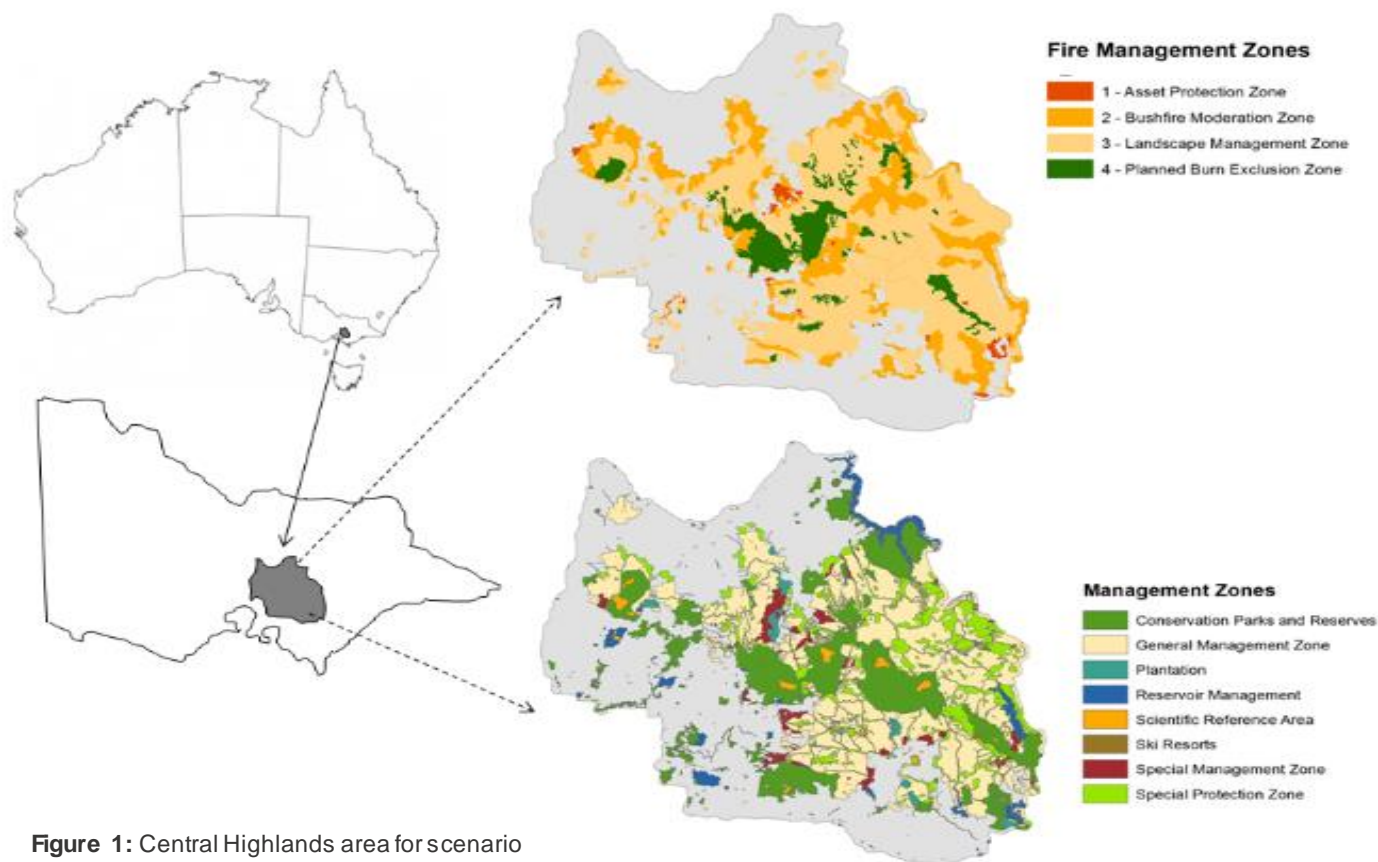


Figure 1: Central Highlands area for scenario modelling

- Outputs relevant to both tactical/short-term (3 to 5 years) and strategic/long-term (~5 to 50 years) planning timeframes.
- A DSS model interface that can be used by a pilot group of trained DELWP users.

Phase 2 (In the next 2-5 years), will further define the DSS prototype to:

- Extend to other forested landscapes within Victoria.
- Develop and integrate a broader set of scenarios based on community and stakeholder consultation.
- Examine and recommend ways to present multiple risk metrics to stakeholders and communities.
- Improve the useability of the DSS interface in response to feedback from DELWP users.

Policy and Operational Implications

In the first instance, the prototype will be used by DELWP, to evaluate the effects of alternative strategic-level policy scenarios for the Central Highlands forests on biophysical and social risk issues, over short and long-term planning timeframes.

By the end of Phase 2, the model will be tested and available to key industry stakeholders, who will be able to access the scenario-based evaluations.

It is intended the DSS be extended to include other Victorian forested landscapes and will enable community-based discussions with land management agencies around decision making.

The Research Team

The DSS is being developed by a collaboration between leading researchers from the IFER program at the University of Melbourne, and supported by a Project Reference Group, comprised of broad representation from land, water and emergency management agencies. As the model development progresses, this reference group will expand to include community stakeholder groups.

Project Status (February 2019)

The project is in development stage, with parallel activities in complex software development, assimilation of metrics for the various values, and new social and economic research to be integrated into the DSS, currently underway. A limited set of scenarios has been agreed to test the model, including climate change, harvesting and planned burning scenarios.