A decision framework and ecological risk assessment tool to support bushfire management planning

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Effectively managing the risks of fire to ecosystem resilience and threatened species is a commitment of Victoria's Safer Together policy. Through collaboration with DELWP, and its partner agencies, the project team have developed a decision-making framework, including a Fire Analysis Model for Ecological values (FAME), to facilitate more effective and transparent consideration of ecological values in fire management decisions

BACKGROUND

Including ecological values into fire management strategy selection in Victoria has been constrained by:

- Poor specification or use of ecological objectives
- Lack of clarity in how to balance ecological and non-ecological values
- Difficulties in communicating desired ecological outcomes to decision makers and stakeholders
- A lack of process for identifying and addressing critical knowledge gaps for improving decisions

THE DECISION-MAKING FRAMEWORK

Structured decision-making deconstructs decisions into common components and aids logical and transparent decision-making. It provides a method to make complex decisions that involve trade-offs between multiple competing objectives where there high uncertainty about the consequences of management strategies. The framework is a step by step process that delivers a transparent evaluation of fire-management strategies on ecological values in concert with other values e.g. human life.

FAME

FAME consolidates thousands of files containing ecological data into a single platform to support ecological risk assessment for fire management. FAME allows users to analyse and evaluate the effect of fire management strategies on ecological objectives, and automates the documentation of data inputs and key decision points, as well as providing standard outputs to inform decision makers.
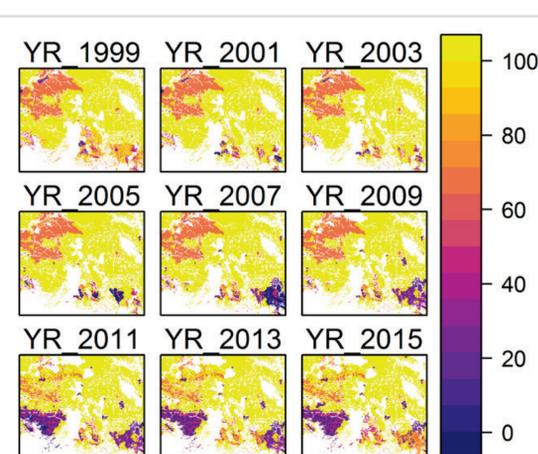

Figure1: Spatially explicit models of species relative abundance (0-100) with fire history allow calculation of change in any management area.
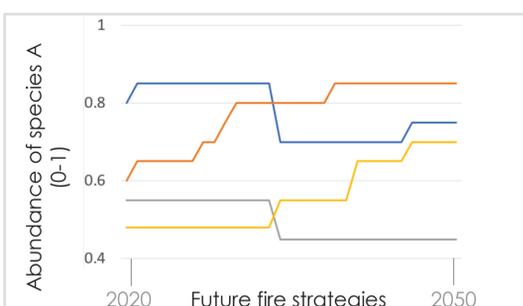

Figure 2: Changes in species relative abundance (0-1) over four future fire management strategies from 2020-2050 (coloured lines).

Above: Powerful Owl, *Ninox strenua*, is listed in the Flora and Fauna Guarantee Act 1988.   Photo courtesy of N. Amos

KEY LESSONS

- A strong focus on end-user requirements and close collaboration with DELWP policy leads was crucial to successfully tailoring the research to be relevant and flexible for the application of strategic bushfire management planning.
- Refining existing ecological objectives and performance measures using an iterative approach reduced the ambiguity of terms and clarified the role of different objectives in the decision-making process.
- A pragmatic approach that balanced the need for state-wide consistency and regional flexibility improved results by maximising data availability and supporting stakeholder preferences.