



Developing a decision framework that integrates ecological models to inform bushfire management planning

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This project aims to develop a consolidated and flexible framework for applying ecological models and metrics to manage risks to ecosystem resilience and threatened species to facilitate effective decision making.

BACKGROUND

Historically, a clearly defined process to incorporate ecological values in the selection of fuel management strategies was lacking.

- Ecological objectives were either poorly specified or not accounted for, and;
- Trade-offs involved in Strategy selection were not explicit

In addition, there is a lack of confidence in ecological models and data, because:

- There have been difficulties in communicating desired ecological outcomes to decision makers and stakeholders,
- There is no current method for identifying critical knowledge gaps to improve decisions

THE APPROACH

We will use a structured decision-making (SDM) framework to guide the decision process (Figure 1). A SDM process is focused explicitly on addressing the fundamental objectives of those involved in the decision-making process. SDM provides a systematic and transparent platform for synthesizing knowledge and uncertainty, and exploring the consequences of management alternatives, such as the amount and configuration of planned burning, in relation to the objectives.

Steps

1. Develop a problem statement to enable a shared understanding of the decision context
2. Develop measurable objectives
3. Consolidate ecological models and data into a user-friendly system to enhance bushfire management, research investment and monitoring.
   - Identify which species and regions are data poor
   - Develop and consolidate analysis scripts
   - Develop user interface e.g. shiny app

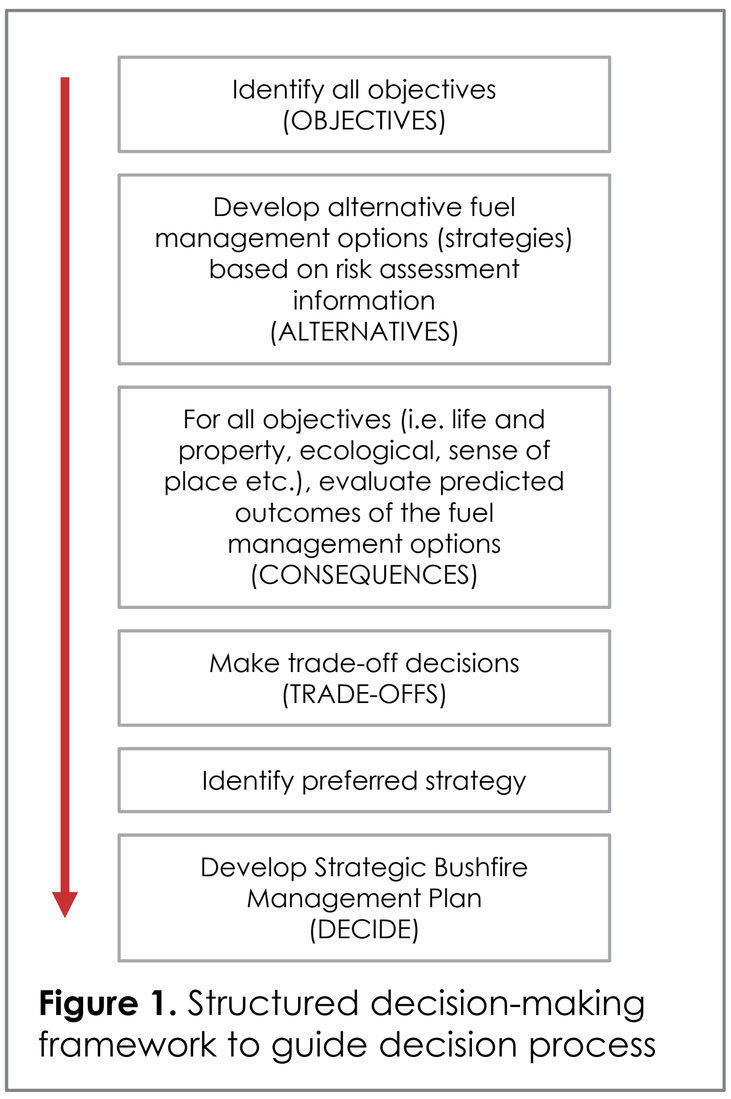

Figure 1. Structured decision-making framework to guide decision process

PROGRESS TO DATE

We undertook workshops with decision makers, risk analysists and stakeholders to develop a set of:

- Ecological objectives that are relevant to all regions
- Direct and more easily communicated performance measures.

For example (see Figure 2):

Objective = Minimise decline in the persistence of all animal species

Performance measure = the proportion of all significantly impacted* faunal key fire response species (e.g. decline by 20%* in relative abundance, occupancy, extent).

We are currently working to consolidate analyses scripts to produce user friendly outputs of the performance measures (Figure 2)

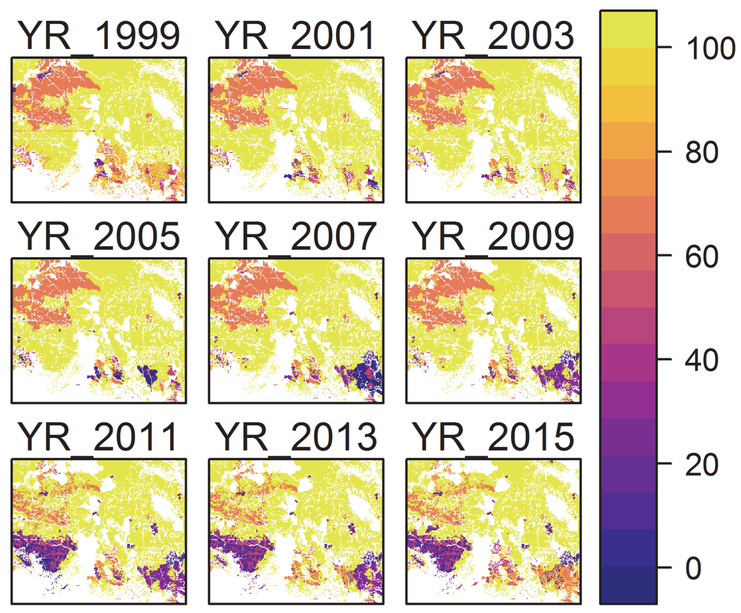

Figure 2. Spatially explicit models of species relative abundance with fire history allow calculation of change in any management area. This example shows Pilotbird in Central Highlands 1999-2015

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