Trade-offs in fire management between people and avian biodiversity

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Introduction

The primary aim of fuel reduction burning is to reduce the risk of future wildfires to human life and assets (Penman *et al.* 2011).

However, short fire intervals and broad-scale burning presents a major threat to biodiversity (Gill and Bradstock 1995). These trade-offs between human and ecological objectives must be considered for effective fire management.

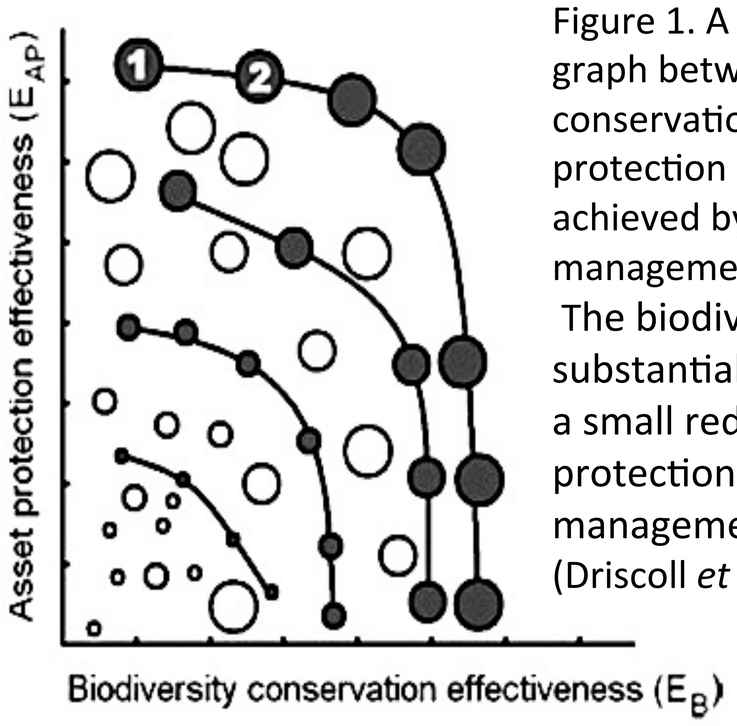

Figure 1. A hypothetical trade-off graph between biodiversity conservation (E_B) and asset-protection (E_{AP}) effectiveness achieved by a particular suite of management interventions.

The biodiversity outcome can be substantially improved with only a small reduction in asset protection by choosing management suite 2 over suite 1. (Driscoll *et al.* 2010)

Project Aim

To model and evaluate the trade-offs in fire management between avian biodiversity and risk to human life and property across a range of fuel reduction targets.

Hypothesis

1. **Lower fuel reduction targets will favour avian biodiversity**

The geometric mean of bird species relative abundance will have a positive relationship with increasing time since fire.

2. **Higher fuel reduction targets will provide greater protection to people and property**

The risk of house loss during a wildfire will have a positive relationship with available fuel (surrounding vegetation) within a given area.

Approach

Evaluation of existing data sets

Long-term fire history and bird survey data is available from the Foothills Fire and Biota Project.

Developing a trade-off model

Quantify the trade-offs in fire management between people and biodiversity across a range of fuel reduction targets.

Testing the model

Fieldwork will involve conducting bird and vegetation surveys across a range of post-fire age classes to test the predictions of the model.

Fieldwork

Bird Surveys

I am using automated recording units to detect the presence of several key fire response bird species within the Victorian Central Highlands.

Positive fire response

- Flame Robin, *Petroica phoenicea*
- Scarlet Robin, *Petroica boodang*

Negative fire response

- Eastern Yellow Robin, *Eopsaltria australis*
- Silvereye, *Zosterops lateralis*
- Gang-gang Cockatoo, *Callocephalon fimbriatum*

Vegetation Surveys

I will be recording vegetation life form and height across 100m transects to access the habitat structure and fuel load at each site.

Photos: Flame Robin and Eastern Yellow Robin (BirdLife Australia)

Research funded by the Leslie Bird Research Award