Introductory Document

A practical guide for conservation planning using the General Ecosystem Model for Southern Australian Woodlands

Project 7.2

Threatened Species Recovery Hub

National **Environmental Science** Programme

Introduction

Eucalypt woodlands constitute some of the most extensive and yet exploited ecosystems in Australia. There are 24 southern Australian eucalypt woodland communities listed as threatened under the Environment Protection and Biodiversity Conservation Act (EPBC Act; 16 Critically Endangered, 8 Endangered) but just 5 of these communities currently have national recovery plans.

Conservation and recovery plans are typically developed one at a time, and resources for conservation assessment and recovery planning are scarce. As such, there is a critical need for a more cost-efficient approach to the recovery planning process.

Under the National Environmental Science Programme (NESP) Threatened Species Hub Project 1.2.5, we brought together scientists and land managers from the Department of Agriculture, Water and the Environment (DAWE), state agencies, research institutions, and not-for-profit organisations to build an overarching ecosystem model for southern Australian woodlands that can aid the EPBC listing and recovery planning process. This project used a State Transition Model (STM) framework to provide structured advice for conservation planning for EPBC-listed communities, based on the Eucalypt woodlands of southern Australia.

This guide uses information gathered throughout the project to provide a structured approach to conservation planning based on expert knowledge and field data from eucalypt dominated woodlands across Australia.

Building the General Ecosystem Model for Southern Australian Woodlands

Expert elicitation

Woodland experts from across southern Australia participated in a series of online surveys and workshops to create a general State and Transition Model that can be used as a template for the management of temperate Australian eucalypt woodlands.

Defining the woodland types

We focused on three types of woodlands from the CSIRO Australian Ecosystem Models Framework: Grassy, Floodplain, Shrubby and Obligate-seeder (combined). We checked the listing advice or consulted experts to associate these broad woodland types with each of the EPBC listed communities. (link to report).

Choosing the general condition states

Experts worked together to agree upon a set of eight condition states that might occur in all woodland types. The names of condition states were generic, to ensure they were generalisable, but examples of associated land-uses were included for clarity (for example, high quality roadside remnants might be in a Simplified 1 state).

Possible transitions

Experts detailed the conditions (threats and drivers) required for transitions to occur, and which vegetation attributes might indicate that a transition has occurred. The results from this phase of the project are described here (link report).

Exploring the model with field data

Following the expert elicitation phase, we compiled existing woodland condition datasets from a wide geographic range and asked dataset contributors to assign each of their field sites to one of the eight condition states. We used the vegetation attributes collected in each of datasets to explore differences in the way field ecologists interpreted the condition states, and how the vegetation attributes varied among condition states within datasets. We also identified vegetation attributes that are best able to distinguish between pairs of condition states, that could be used as part of a targeted monitoring program.

Integrating fauna into the general model

We invited woodland fauna experts to participate in a survey and virtual workshop to elicit feedback and ideas for how to increase the relevance of our vegetation focused Woodland Ecosystem Model. Experts listed threats, management options, habitat attributes and indicator species for each condition state. Although a more comprehensive integration of fauna into the ecosystem model is planned, we have included additional fact sheets into the Guide to highlight specific habitat attributes that should be considered when restoring listed woodlands.

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The Guide

This guide is an attempt to bring together the expert knowledge and field data to create an interactive and practical framework to streamline the process of building conservation plans for eucalypt woodlands, including advice on management and targeted monitoring.

Who is the target audience for this guide?

There are expected to be two types of users of this guide: (1) those responsible for writing and researching the specific Conservation Advice and Recovery Plans for existing and new federally listed woodland communities and/or; (2) those responsible for designing and implementing regional restoration or management projects for a eucalypt woodland community (in southern Australia).

How should the guide be used?

The guide can be used to assist with conservation planning (e.g. Recovery plans or Conservation Advice) for listed ecological communities, and/or it can be used to set management objectives and create a management and monitoring program for on-ground restoration. We have focused the guide on a general state-and-transition model for woodland condition. As such there is detail on the specific risks and opportunities related to the eight condition states. The steps in using the guide to help develop conservation plans for listed woodland communities are as follows:

Step 1: Choose a woodland type that most aligns with your focal woodland community.

Step 2: Set landscape goals by first considering the type and proportion of condition states present in the landscape.

Step 3: Identify the restoration pathways and transition risks that are most likely for each of the condition states in the landscape.

Step 4: For each condition state, use the relevant fact sheet to create a detailed plan. The fact sheets include information on key threats, decision trees for different restoration pathways, and monitoring variables that will indicate the direction of change through time.

Step 5: For each condition state, consider the habitat attributes and landscape processes that influence fauna, and identify opportunities to enhance site-scale restoration for faunal communities.

Step 6: Monitoring programs are critical for evaluating the effectiveness of management interventions and should be conducted in a consistent, objective way, which may require additional resources. Uncertainty about management intervention effectiveness is often high and trialling different actions via adaptive management may be necessary.

Link to the guide

BELOW: A waterhole amongst a grey box woodland in northern Victoria. Image: Megan Good

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