Native Vegetation

Project Fact Sheet 7: *DEP11*	**A landscape approach to determine the ecological value of scattered trees**
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Host Organisation:	Department of Water, Land and Biodiversity Conservation
Duration of project:	October 2001 to October 2004

Project Summary

This project will identify the ecological values of scattered trees at the landscape scale in South Australia, using geographic information systems (GIS). The practical tools developed will aid rapid assessment of these values and should assist decision-makers nationwide.

Throughout many parts of Australia, the only remnants of the original woodland vegetation communities are single native trees (scattered trees) and small groups of trees (less than one hectare) remaining in pastures. These trees continue to provide habitat for wildlife, even though the native understorey has disappeared, and they may also contribute to wildlife corridors as stepping-stones between vegetation remnants. There is continuing pressure to replace pastures and associated scattered trees with intensive agricultural developments such as Tasmanian blue gum plantations, vineyards, and centre-pivot irrigation systems.

In South Australia and some other States, legislation requires that the significance of scattered native trees be assessed when their clearance is proposed. However, our quantitative understanding of the significance of individual trees in the landscape is currently poor. In South Australia, remnant vegetation mapping does not include scattered trees, and applications to clear scattered trees are assessed individually at present.

Project Objectives

The project's objectives are:

- To analyse spatial patterns of scattered trees and currently unmapped small remnants (less than one hectare) within two agricultural regions in South Australia;

- To develop a practical spatial model (using GIS, existing data sets, and knowledge of the habitat requirements of selected mammal and threatened bird species in each region) identifying critical areas where scattered trees and clumps of trees in cleared agricultural land contribute to biodiversity conservation;

- To identify broad zones where approval for vegetation clearance is considered to be unlikely;

- To undertake case studies using the model to identify, at the landscape scale, priority areas for revegetation;

- To investigate, using GIS and remote sensing techniques, the contribution of scattered trees and small remnants to native vegetation cover targets within the study areas;

- To communicate the results of the project to key target audiences.

Approach and Methods:

The two study areas, one centred upon Tintinara the other in the lower south east of South Australia, cover more than 1,500 square kilometres. Key existing spatial data sets covering the study areas will be used including: vegetation association mapping, both pre-European settlement and current; native vegetation (greater than one hectare) cover mapping; and vertebrate fauna survey data.

All scattered trees within the lower southeast study area, including those on roadsides and along creeks, will be mapped using digital orthorectified photographs. Data already collected through clearance assessments will be linked to the mapped scattered trees.

More rapid remote sensing methods for the classification of scattered trees from satellite imagery will be tested in the Tintinara study area.

Several data sets will be generated in order to estimate the following:

1. Cover and density of remaining scattered trees per hectare;

2. Cover and density of scattered trees within pre-European vegetation communities;

3. Distance of scattered trees from remnant vegetation blocks; and

4. Total native vegetation cover provided by scattered trees.

Habitat requirement criteria for selected mammal and threatened bird species will be developed for the study area using expert knowledge. The predicted habitat of threatened bird species will be generated using existing spatial data sets and those created from scattered tree mapping. Additional bird survey data will be collected to assist in determining the use of different types of scattered tree densities or cover by different bird species. Maps indicating areas of high biodiversity value in the landscape will be generated using a scoring system. Strategies for identifying potential revegetation sites will be developed based on the results of the scattered tree mapping and modelling.

Benefits

The project will help decision-makers by identifying the ecological values of scattered trees at the landscape scale. The approach compares remnant scattered trees with known biodiversity values using GIS. In particular, such information should lead to improved assessment of clearance applications and help identify areas where clearance approvals are unlikely. These outcomes will promote ecologically sustainable development and offer greater certainty, at an earlier stage, for industry groups. The proponents of applications will have available a better basis for making decisions about land purchase, investment and project design.

Identification of potential revegetation areas in South Australia and the focus on rare and threatened species will help with strategic planning of revegetation sites. The model will provide information that is critical to the formulation of terrestrial biodiversity targets within the Murray-Darling Basin and elsewhere.

Linkages will be established with agencies responsible for native vegetation management and regional stakeholders, especially within the Murray-Darling Basin.

Guidelines on the ecological value of scattered trees will be developed from the models, for use within the Murray-Darling Basin and in other rural regions of Australia.

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