

RESEARCH IN PROGRESS

Woodland Tree Dynamics in Western New South Wales

Description:

Managing tree densities in western New South Wales: development of a process-based model to predict woodland dynamics

Funding: ARC Linkage Grant

Partner: NSW DECC

\$281,000 (plus in-kind) over 3 years: 2006–2009

Project leader: Ian Lunt (ILWS)

Other team members:

Ross Bradstock, (Chief Investigator, UoW)

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Woodlands in NSW extend from the temperate to arid zones and are dominated by *Eucalyptus* species and *Callitris glaucophylla* (white cypress pine). *Eucalyptus* are fast-growing and fire tolerant compared to slow-growing, fire-sensitive *Callitris*. Since European settlement, disturbance regimes in woodlands have changed—especially clearing, fire and grazing—resulting in major changes to stand composition and structure in many places. In particular, *Callitris* has regenerated at high densities in some areas. These structural changes have important implications for both conservation and agricultural production. However, the effects of different disturbance regimes on stand dynamics, in sites of differing productivity, are poorly known.



Objectives:

This project aims to improve planning and management of woodland tree densities in western NSW by:

1. Identifying the factors influencing *Callitris* and *Eucalyptus* stand dynamics, particularly interactions between disturbance regimes and productivity gradients.
2. Developing a process-based stand model to predict future woodland tree dynamics.

Methods:

Field studies are investigating:

- the effects of clearing on competitive interactions at different points along a productivity gradient
- how drought-driven mortality varies along a rainfall productivity gradient
- how fire intensity affects tree survival

A predictive, process-based stand simulation model will examine:

- how disturbances have modified stand structures since European settlement
- how disturbance and site productivity interact to influence coexistence of different species, and
- the outcomes of different management options.

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