



Ecological Society of Australia

2011 Annual Conference
Ecology in Changing Landscapes

Conference Handbook

21-25 November, 2011
Wrest Point, Hobart, Tasmania



Monday 21 November, 1655, Tasman Room A

Modelling riparian woodland response to altered and novel disturbances in production landscapes in southern Queensland

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Understanding native ecosystem responses to altered and novel disturbances is a crucial foundation for policy development and management aimed at maintaining and enhancing biodiversity and ecosystem services in production landscapes. Remnant riparian woodland ecosystems in an intensively-farmed landscape in the northern Murray-Darling Basin are subject to significant changes in hydrological regimes and land use intensity, and exhibit dieback and limited recruitment of the dominant canopy species complex, *Eucalyptus camaldulensis/tereticornis*, widespread invasion by the introduced perennial herb *Phyla canescens*, and altered floristic composition and function. Current land and water management fails to address critical changes in this landscape, and hence curb ongoing degradation.

This study indicates the importance of systems-based empirical research to developing better understanding of the dynamics of remnant ecosystems in highly-modified landscapes. It uses a resilience-based state and transition modelling approach to synthesise results, highlighting key drivers of stability and critical change in the condition and function of these riparian ecosystems. Such research is vital to understanding the ecology of remnant native ecosystems and their role in the provision of important ecosystem services in production landscapes. Representation of this understanding in a simple conceptual model provides an important link to support evidence-based policy and adaptive management.

Kathryn Reardon-Smith has recently completed her PhD on ecological responses to altered disturbance and resource regimes in riparian woodlands on the highly-modified Upper Condamine floodplain in the northern Murray-Darling Basin, southern Queensland. She is a member of the Australian Centre for Sustainable Catchments, a trans-disciplinary research centre at Toowoomba campus of the University of Southern Queensland.