Change is the new stability: disturbance and riparian woodlands in a production landscape

Remnant ecosystems in agricultural landscapes are relatively poorly-understood in terms of their diversity, function and dynamics (resilience) under altered disturbance regimes. Yet these ecosystems, currently existing close to ecological thresholds, can contribute significantly to our understanding of how ecological systems respond to change. Such knowledge is vital to our understanding of how major disturbances such as climate change may play out across landscapes, and how management may most-effectively respond to limit the loss of biodiversity and ecosystem services.

The upper Condamine River, at the headwaters of Murray-Darling basin, drains one of the most intensively-farmed landscapes in eastern Australia. Riparian woodland remnants on the upper Condamine floodplain are in poor condition, with significant dieback and limited recruitment of canopy species, as well as widespread invasion by the introduced perennial herb *Phyla canescens* (lippia). Mechanisms of ecological change in this landscape are not well-understood and management efforts to address these issues over recent decades have led to little marked improvement.

This research investigates the condition (composition, structure and function) of *Eucalyptus camaldulensis*/*E. tereticornis* floodplain communities in relation to selected natural and anthropogenic disturbances (e.g. climate variability, altered land- and water-use, invasive weeds) operating at a range of spatial and temporal scales. The study takes a multi-faceted approach to develop an understanding of key drivers of ecosystem change in this environment, and uses State-and-Transition and Bayesian Belief Network approaches to model how these drivers integrate to influence observed condition.