

## 12 ECOLOGICAL RESPONSES OF AUSTRALIAN GRASSY WOODLAND AND SHRUBLAND ECOSYSTEMS TO AGRICULTURAL INTENSIFICATION: LESSONS FROM LONG-TERM, MULTI-SPECIES, MULTI-BIOME STUDIES

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**Lesson #1.** Multi-disciplinary studies of species and ecosystem responses to agricultural intensification using a range of complementary approaches that fill in the whole ecological story are by far the most efficient and informative.

**Lesson #2.** Pattern analysis is informative, but accurate quantitative prediction about biodiversity trajectories that can be used to develop and evaluate alternative management options generally depends on understanding process, and this requires detailed longitudinal studies.

**Lesson #3.** High levels of biodiversity and ecological function can persist in intensively managed landscapes.

**Lesson #4.** Generalities of ecological response to land use intensification exist across species and even biomes and these can form key management guidelines for achieving conservation.

**Lesson #5.** Interactions between related ecological processes often result in significant non-linear dynamics that drive systems and, importantly, create thresholds of stability, viability and persistence.

**Lesson #6.** Connectivity is real for plants and as a result there is often a disconnect between the biologically appropriate scale for management and the enterprise scales of land ownership which is where land management decisions are made and implemented.

**Lesson #7.** Having ‘flagship’ species or ecosystems that land holders can recognise and identify with can be a powerful tool for motivating conservation focused land use activities, especially if it is possible to identify multiple values to native species beyond direct biodiversity conservation.

### Introduction

Over the past 15 years we have worked in grassland, grassy woodland and mallee woodland communities in south-eastern Australia trying to understand how native plants have