29. Camera trapping analysis of mallee wildlife

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Abstract

Joe Benshemesh has demonstrated the feasibility and promise of camera traps for observing mallee wildlife. Camera traps could provide important data on fox activity in both baited and unbaited sites as part of the adaptive management assessment of fox baiting. Camera traps would provide a crucial link between baits and foxes (does baiting successfully reduce fox density?) so that we can better establish the link between foxes and Malleefowl (does fewer foxes mean more Malleefowl?). We will model how fox activity is detected by camera traps and make recommendations on camera trap placement in the landscape to support a fox control experiment.

Project outline

Malleefowl (*Leipoa ocellata*) conservation is a complex process. Many different threats play a role in the decline of this bird species (Benshemesh 2007). Foxes are thought to be a major threat, but fox baiting in Malleefowl-inhabited areas has not led to a significant increase in Malleefowl abundance (Walsh *et al.* 2012). In an attempt to resolve uncertainty around the relationship between foxes and Malleefowl, a fox baiting experiment has been designed (Hauser *et al.* 2014, Lahoz-Monfort & Hauser 2014) to compare fox and Malleefowl abundance across paired treatment and control sites in various locations across Australia (Lahoz-Monfort & Hauser 2014).

Although established programs and protocols for monitoring Malleefowl exist across Australia, we lack data on fox densities in Malleefowl habitat. Fox density is the missing link between baiting actions and Malleefowl persistence. Camera traps promise to be a highly useful way to monitor foxes in remote areas. They are relatively low in cost, provide a non-invasive survey technique (Silveira *et al.* 2003), and have been successfully used in other fox monitoring projects (Sarmento *et al.* 2009).

In this project we will design a camera trap arrangement that is capable of detecting relevant changes in fox abundance. The first step will include a review of the literature on the use of camera traps, obtaining advice from experts, and analysing pilot data from a pre-existing camera trap survey (Benshemesh *et al.* 2014). Based on these findings, we will focus on designing a 'prototype' camera trap arrangement. Simulations will then be conducted to examine fox abundance in relation to different intensities of fox baiting, and the simulated data will be used to test the first camera trap arrangement. The camera trap arrangement will be adjusted accordingly, such that we are able to detect the smallest change possible for a stated monitoring budget.

Collecting data using a carefully designed camera trap arrangement will offer a new dimension to the existing Malleefowl activity data. It offers our best chance to discover whether baiting is useful to reduce fox density in Malleefowl habitat, and whether reducing fox density can benefit Malleefowl persistence. These data will support the broader adaptive management project (Hauser *et al.* 2014) in developing effective conservation actions for Malleefowl.

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