7

Population estimates of an endangered rock-wallaby (*Petrogale penicillata*) using time-lapse photography from camera traps

Catie Gowen and Karl Vernes

Abstract

Camera trapping techniques, in combination with robust population estimators, can provide estimates of animal abundance. Here we use a novel technique for estimating the abundance of an endangered macropod. Time-lapse photographs from camera traps were used to derive minimum known-to-be-alive (MKA) estimates for the brush-tailed rock-wallaby (*Petrogale penicillata*), at Green Gully, Oxley Wild Rivers National Park in northern New South Wales, and contrasted with individual recognition estimates from still photographs taken with a single lens reflex (SLR) camera. On average, time-lapse photography returned estimates 32.5% lower than those achieved through SLR photography. However, we did not consider this an adverse issue due to the small number of animals present within each colony. In addition, the time-lapse photography data provided insight into the activity profiles of animals. Time-lapse photography has the capacity to provide relative abundance data that are of comparable accuracy and precision to other ground-based techniques, such as mark–recapture based on SLR photography.

Introduction

Over the past decade, improvement in camera technology and concurrent decreasing costs has led to increased popularity of the use of camera traps for surveying terrestrial mammals (Tobler *et al*. 2008). Photography has been a common adjunct to animal census for many years (Srbek-Araujo and Chiarello 2005), but with recent technological advancements, photography provides an alternative to wide scale surveys, such as line and distance transect sampling. Camera trapping provides an alternative, non-invasive tool for measuring patterns of abundance, along with behavioural ecology, habitat use and reproductive information, knowledge of which are key for effective wildlife conservation (Silveira *et al*. 2003).

The brush-tailed rock-wallaby (*Petrogale penicillata*) is a medium-sized macropodid typically inhabiting structurally complex, rocky outcrops (Taggart *et al*. 2008). Unlike the majority of larger macropods, these wallabies prefer to live in colonies, which usually number fewer than 12 individuals (Piggott *et al*. 2006). Since European settlement, populations have declined significantly in number