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Release strategies for fauna reintroductions: theory and tests

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Summary

Reintroductions have become an integral part of conservation management for a variety of threatened species in Australia and New Zealand. This popularity largely reflects the dramatic impact that exotic species have had on the indigenous fauna of these countries. With control and eradication of several of the most detrimental exotic species from defined areas, reintroductions can be initiated in the absence of the pressures that caused the original extinction. Despite the volume of reintroductions being undertaken, the probability that a project will achieve the re-establishment of a viable population is not guaranteed. Many of the difficulties associated with reintroductions relate to the inherent challenges animals are exposed to throughout the translocation process and following release. 'Release strategies' are components of the reintroduction process that can be deliberately designed to manage these problems. They can, therefore, improve post-release establishment probabilities. We review here several release strategies that are commonly implemented in Australasian fauna reintroductions, summarise the ecological theory underlying their design, and provide examples to highlight their influence on post-release establishment. The selected release strategies include the design of the composition and size of the release group, the timing and number of release events and the selection of release protocols (delayed versus immediate releases).

Introduction

Reintroduction is defined as the intentional movement and release of an organism inside its indigenous range from which it has disappeared (IUCN 2013). Over the course of the last century, reintroductions have become an integral tool for conserving hundreds of threatened species around the world (Seddon *et al*. 2005; Seddon *et al*. 2007). Despite their popularity, the probability that a reintroduction will achieve the ultimate aim of establishing viable and sustainable populations in the wild is not guaranteed (Fischer and Lindenmayer 2000; Soorae 2008, 2010, 2011). Reintroduction failure is usually attributed to extrinsic factors such as the suitability of the recipient environment and the impact of post-release predation (Wolf *et al*. 1996; Fischer and Lindenmayer 2000; White *et al*. 2012). However, there are also intrinsic factors that can influence reintroduction outcomes. These intrinsic factors include the characteristics of the founder group and the stress responses of reintroduced species to applied processes (Letty *et al*. 2007; Dickens *et al*. 2010). Although the intrinsic challenges