

Density-dependent breeding site selection in translocated populations of South Island Robin and South Island Saddlebacks

Pascale Michel¹, Peter A. Whigham², Kath Dickinson³ & Ian Jamieson¹

¹Department of Zoology
University of Otago, Dunedin, New Zealand
Email: pascale.michel@botany.otago.ac.nz

²Spatial Information Research Centre
University of Otago, Dunedin, New Zealand

³Department of Botany
University of Otago, Dunedin, New Zealand

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ABSTRACT

Reintroduction of threatened species to predator-free offshore islands has long been advocated in New Zealand as a prime management tool for conservation. They also provide a good experimental framework to investigate establishment patterns and density-dependent habitat selection of individuals in new environments. For example, questions such as: Do animals settle in a given habitat according to its quality or environmental cueing? How do habitat preferences vary with population growth? and could density-dependent habitat use influence territorial behaviour and lead to co-operation amongst individuals? Understanding these underlying patterns in habitat selection appears fundamental for successful recovery programs of sedentary species that occupy all-purpose territories.

Annual changes in breeding site characteristics of translocated populations of South Island Robins and Saddlebacks will be mapped over topographic, or when available, vegetative maps of Ulva I. (Stewart I.) and Motuara I (Marlborough Sounds). Distance weighing extrapolation of vegetation structure, cavity characteristics and food availability, obtained from field data, will be applied to determine variation in habitat use and suitability for each island. Using Voronoi polygons, spatial models for breeding site selection will derive changes in territory size and other characteristics as a result of increasing density. Effect of habitat characteristics on breeding success of these populations will be explored using Geographically Weighted Regression. Finally we will look at the application of Prisoner Dilemma models to understand the observed variability in territorial behaviour between populations.

Keywords and phrases: breeding site selection, threatened species, habitat use, spatial models