43

Assessing the success of re-introductions whilst accounting for multi-species populations.

In response to the dramatic declines of species diversity and abundance, ecologists are more frequently using conservation and management efforts to restore and promote species populations. One particular method is the translocation or reintroduction of species from one site to another with beneficial outcomes at population, species or ecosystem level (IUCN/SSC, 2013).

One key aim of translocating individuals, which is often used as a metric for success, is to re-establish a thriving population into a formerly occupied indigenous habitat (Armstrong & Seddon, 2008). However, the effect of these translocations on the abundance of other species at both the donor and recipient site are often overlooked when determining the success of a reintroduction. One reason for this is that the monitoring of individuals post-reintroduction can vary widely in both intensity and collection methods between species. Hence, metrics of reintroduction success which account for the effect on multiple species require a synthesised method for integrating many data types.

When analysing data on multiple species, abundance is often estimated separately for each species. To our knowledge it is not common practice to integrate data types but it holds obvious incentives for extracting more information out of data. We present a multi-species modelling framework for analysing species monitoring data. The methodology, which may be used in the assessment of reintroduction success, allows for data of varying types and collection efforts. We apply this to real reintroduction data of species indigenous to Mauritius' islets which has been provided by the Mauritius Wildlife Foundation.

We supplement this work with an Rshiny app aimed at making the methodology accessible to non-statisticians. This will enable the user to analyse data, gather results and obtain more information from data collected from multiple sources. Another possibility would be to provide the user with simulations to forecast species abundance which may be used as evidence in policy management decisions to support reintroduction programmes.