

16th Annual Australasian Bat Society Conference and AGM 2014

Improved understanding of local biodiversity using global information: a case study of microbats in the Australian Wet Tropics.

Tamara Inkster¹, Will Edwards¹, Simon KA Robson¹, **Jeremy Vanderwal**^{1, 2}, Steve Williams¹

¹ Centre for Tropical Biodiversity & Climate Change, & School of Marine & Tropical Biology, James Cook University, simon.robson@jcu.edu.au

² eResearch, James Cook University

Species distribution models that predict species distributions as a basis of physical environmental parameters (SDM's), play a key role in biodiversity conservation efforts. How to best construct these models in a world of varying information availability, however, remains unclear. Here we test the validity of using only distribution and environmental data from the focal region of interest, versus data from the entire distribution, by modeling the distribution of bats within the Wet Tropics World Heritage Area (WTWHA) using both local and Australian-wide 'global' distribution data. Data on species locations, collected from field surveys along elevational gradients on five mountain ranges within the WTWHA, was supplemented with biodiversity and museum datasets. SDMs were generated for 28 bat species, each with two background (or pseudo-absence) options which either ignored or explicitly accounted for sampling bias in the observation data. Nearly 90% of the SDMs performed best (both quantitatively and qualitatively) using the global data. Of these models, accounting for the sampling bias generally outperformed models that ignored records outside the focal area. This study represents the first detailed description and analysis of the distributions of microbats in the WTWHA and provides a framework for species distributions models of bats and other taxa. The most useful SDM's even for local areas, are constructed using data from the complete range of the target species.

SPOKEN PRESENTATION