

Supplementary Information

The influence of food abundance, food dispersion and habitat structure on territory selection and size of an Afrotropical terrestrial insectivore

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Estimation of mean annual population size of the Usambara Thrush in the study area

Methods

In order to assess the proportion of the total population in the study area that was radio-tracked, because the number of birds radio-tracked was relatively small ($N = 9$), we used long-term capture recapture data for the Usambara Thrush in our study area to estimate mean population size (Newmark 2006; Korfanta et al. 2012). The Usambara Thrush was surveyed annually within the study area at three sites over a 27-year period (1987–2013) for three days per year per site using mist-nets. The habitat structure of the three sites differed and was representative of the three major habitat types (primary forest, slightly disturbed forest, and moderately disturbed forest) that occurred in our study area. Additional details regarding survey methods and protocols are presented in Newmark (2006) and Korfanta et al. (2012).

We obtained point and error estimates of population size for each year from 1987 through 2013 using the Huggins closed population models (Huggins 1989, 1991) under a robust design framework (Kendall et al. 1995, 1997) in Program MARK (White and Burnham 1999). We used AIC_c for model selection (Burnham and Anderson 2002), and averaged annual population size estimates to obtain

mean population size; we computed the corresponding error term using the delta method (Seber 1982).

Results

Based on AIC_c model selection, the most parsimonious model for our data was one in which capture probability (p) and recapture probability (c) were constrained to be constant and equal to each other across all years. Under that model we found the mean population size of the Usambara Thrush between 1987 and 2013 in the study area to be 17 (± 1) indicating that approximately 53% of the total Usambara Thrush population in the study area was radio-tracked.

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