**Supplementary Material**

Song-count surveys and population estimates reveal the recovery of the endangered Amami Thrush *Zoothera dauma major*, which is endemic to Amami-Oshima Island in south-western Japan

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Appendix S1. Estimation of the relative density of mongoose (RDM) on Amami-Oshima Island.

To estimate the relative density of mongoose (RDM) throughout all 600 m grid cells on the island, the capture per unit effort (CPUE) was calculated for each grid cell based on the number of captured mongoose and the capture efforts (gross trapping days) in each research year. The mean value and the range of the CPUE in each research year are as follows; 2007: 0.46 (0.00–5.75), 2008: 0.42 (0.00–7.87), 2009: 0.19 (0.00–2.36), 2010: 0.12 (0.00–3.32), 2011: 0.09 (0.00–1.17), 2012: 0.05 (0.00–1.17), 2013: 0.02 (0.00–2.51). The CPUE is often used as a population index for small mammals, including the mongoose on Amami-Oshima Island (see Fukasawa *et al.* 2013b, Watari *et al.* 2013). Because there were many “blank grids,” which contained no mongoose traps and therefore no CPUE data, a spatial smoothing of the CPUE was performed using a generalized additive model (GAM). In the GAM analysis, the accumulated number of mongoose captured by three different types of traps (permanently installed kill trap, permanently installed live trap, and “pinpoint trap,” which was temporarily installed in response to a witnessed report of a mongoose) in each grid cell was set as a response variable, and the spatial location (longitude and latitude at the centre of grids) and type of traps were set as explanatory variables, with log-transformed accumulated capture efforts as an offset term. A negative binomial distribution with a log link function was selected to address overdispersion. The smoothed CPUE was standardized to a mean of 0 and a variance of 1 for use as an index of the RDM in each research year.

**References**

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