MADAGASCAR DISSERTATION/THESIS PROJECT

MAD-T03- Occupancy modelling for nocturnal lemurs, carnivores, bush pigs and introduced species with camera traps in Madagascar in the Mahamavo dry forest

Prepared by Dr Peter Long, University of Oxford

For more information contact:
Dr Tom Martin | Head of Research | tom.martin@opwall.ac.uk

In the Mahamavo dry forest most diurnal and nocturnal lemur species are easily seen by teams walking sample routes by day and at night. However, two nocturnal species, the fork-marked lemur (Phaner pallescens) and fat-tailed dwarf lemur (Cheirogaleus medius), are seldom seen by the field teams. Additionally, the forest is within the range of aye-aye (Daubentonia madagascariensis), so it could occur in Mahamavo, although it has not yet been detected. Every year there are a small number of sightings of carnivores including the (Fossa Cryptoprocta ferox), (Falanouc Eupleres goudotti), and Ring-tailed mongoose (Galidia elegans), but not enough observations to infer their distributions or population sizes. The dry forests are also home to bush pigs (Potamochoreus larvatus). For cryptic species such as these, we use a network of 40 camera traps to gain reliable data on distributions, densities and trends through time, without needing to trap animals. Students choosing this project would help design the spatial and temporal sampling strategy for the cameras, select 'best' sites at the local scale to install them on the ground or in trees, visit the cameras to change SD cards and look at the photos and then undertake analysis of the detection histories of each species recorded by the cameras at each site using occupancy models. This powerful approach allows occupancy of sampling units (camera locations) over the course of the season to be estimated taking account of the detectability of each species.

Suggested reading

* indicates particularly useful sources.

*Merson, S D, et al. (2019), 'Activity patterns of sympatric living exotic and endemic carnivores (the fosa) in Western Madagascar's deciduous forests', J. Zool., 307 (3), 186-94.

*Rich, Lindsey N, et al. (2017), 'Assessing global patterns in mammalian carnivore occupancy and richness by integrating local camera trap surveys', Glob. Ecol. Biogeogr., 26 (8), 918-29.

Beaudrot, Lydia, et al. (2018), 'Distributional shifts in a biodiversity hotspot', Biol. Conserv., 228 252-58.

Farris, Z J, et al. (2016), 'Patterns of spatial co-occurrence among native and exotic carnivores in north-eastern Madagascar', Anim. Conserv., 19 (2), 189-98.

Farris, Zach J, et al. (2017), 'Threats to a rainforest carnivore community: A multi-year assessment of occupancy and co-occurrence in Madagascar', Biol. Conserv., 210 116-24.

Gerber, Brian D, Sarah M Karpanty, and Johny Randrianantenaina (2012), 'The impact of forest logging and fragmentation on carnivore species composition, density and occupancy in Madagascar's rainforests', Oryx, 46 (3), 414-22.

Keane, A, et al. (2012), 'The potential of occupancy modelling as a tool for monitoring wild primate populations', Anim. Conserv., 15 (5), 457-65.

Murphy, A, et al. (2019), 'Using camera traps to investigate spatial co-occurrence between exotic predators and native prey species: a case study from northeastern Madagascar', J. Zool., 307 (4), 264-73.

Murphy, Asia J, et al. (2018), 'Using camera traps to examine distribution and occupancy trends of ground-dwelling rainforest birds in north-eastern Madagascar', Bird Conserv. Int., 28 (4), 567-80.

Razafindratsima, Onja H (2017), 'Post-dispersal seed removal by rodents in Ranomafana rain forest, Madagascar', J. Trop. Ecol., 33 232-36.