Funded MSc Opportunity - Mammal activity in response to light

Brief background:

Nocturnal ecology focuses on natural patterns and processes altered and often dictated by the night-time environment. Many groups of animals, especially mammals, are primarily nocturnal. The nocturnal environment is vastly different from the diurnal one as it is subject to different environmental conditions and is under increased anthropogenic pressure, since earth warming is more pronounced at night, and the natural 'illumination landscape' is modified due to artificial or anthropogenic light at night. The nocturnal environment remains understudied, but this is rapidly changing with the advent of improved remote sensing techniques and sensor technology.

Here, we aim to assess the seasonal nocturnal activity patterns of mammals on Telperion Nature Reserve, Mpumalanga, using camera traps. We will compare different techniques and tools for measuring biologically relevant nocturnal light conditions, and artificial light. In addition, we plan to model and map the alteration of nocturnal activity as a consequence of environmental drivers, particularly lunar light.

Key references:

Gaston 2019 Am Nat

Burton et al. 2015 Env Sci

Cozzi et al. 2012 Ecology

Nillson & Smolka 2021 J. R. Soc. Interface

The project

We are inviting applications for an MSc candidate to undertake a **(fully funded)** research project that aims to assess the effects of lunar and artificial light on the activity patterns of mammals on Telperion Nature Reserve in Mpumalanga. Broadly speaking, we expect the student to develop a project focusing on the following areas of investigation:

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- The assessment of which, among a variety of lunar illumination measurement techniques, is most appropriate for the quantification of ecologically / biologically relevant lunar illumination.
- Assessment of the activity patterns of larger mammals on Telperion Nature Reserve under differing levels of night-time light illumination.

This is a collaborative project between the Applied Behavioural Ecology and Ecosystems Research Unit (ABEERU), based in the Department of Environmental Sciences at UNISA, and the Department of Zoology and Entomology of the University of Pretoria.

Supervisors:

Dr H.I. Melville (Department of Environmental Sciences, UNISA),

Dr W.M. Strauss (Department of Environmental Sciences, UNISA), and

Dr B.W.T. Coetzee (Department of Zoology and Entomology, University of Pretoria)

General:

The candidate will carry out the investigations while being registered for an MSc degree in Nature Conservation at UNISA (University of South Africa). The study will, however, be carried out on Telperion Nature Reserve in Mpumalanga Province. We currently have funding to provide the student with a bursary (R 80 000.00 per annum for a maximum of two years) during their two-year registration as a **full-time MSc student**. We will provide housing at the research site for the two year duration of the project and we will provide the incumbent with access to a field research vehicle (shared among field researchers associated with the project) (possession of a valid driver's license is a prerequisite for application for these projects) on site for the purposes of conducting their field research. We will provision the candidate with requisite field equipment to undertake the proposed research. However, the candidate should be prepared to seek additional funding to supplement the stipend that is available. The candidate will be expected to stay at the site, on a full-time basis, for the duration of the study.

The process at UNISA is the following – the candidate enrols for an MSc and initially develops the research design / proposal of the project. The project design will be developed in close collaboration with the supervisors. Upon completion of the proposal (to the satisfaction of the supervisors and the department),

the candidate will be required to apply for ethical clearance for his / her research project (such application includes application for relevant provincial and departmental research permits). Once the ethics permit, for the project, has been granted the candidate may continue with the research component of the project (field data collection, data analysis, and dissertation writing). Upon completion of the project, the resultant dissertation is submitted for internal vetting and external examination.

Applicants for this project will initially be assessed based on the documents that they submit. The supervisors will draw up a short-list of preferred candidates who will be requested to make themselves available for a virtual interview. The supervisors will then make a final decision and inform the candidates of the outcome of the interviews.

Minimum requirements:

- Four-year BSc or BSc (Hons.) degree in Zoology, Animal Ecology, or a related field; candidates with relevant BTech degrees or Post Graduate Diplomas in Nature Conservation will also be considered.
- Excellent academic record,
- Valid driver's licence,
- Proven experience with ecological field studies,
- Willingness to learn remote sensing techniques, including camera trapping, camera photometry, GIS, and spatial statistics in R Studio
- Willingness to spend extensive field hours in remote areas with large wildlife, many of which at night

Additional requirements (advantageous):

- Written and verbal proficiency in English;
- Evidence of publication experience is highly desirable

Interested applicants should send the following:

- **Curriculum Vitae**
- **Academic Record**
- **List of two contactable references**

- **Covering letter**
- **Examples of recent publications (if applicants have participated in such)**

To Dr Melville (melviha@unisa.ac.za) with, 'Nocturnal mammals and light', in the subject line. Applications should be submitted on or before 15th of November 2022. We will review applications and hold interviews with shortlisted candidates (either face to face or virtual / online) after the 20th of November 2022.