



## Departmental Seminars 2018

**Tuesday 24 July 2018** 13:00-14:00  
Niven Library



Effects of temperature and food availability on the reproductive ecology of an arid-zone bird



**Nicholas Pattinson**  
**PhD Proposal**



Mailing list: [biosci-seminars-l@lists.uct.ac.za](mailto:biosci-seminars-l@lists.uct.ac.za)  
Contact: [biocpostdocs@gmail.com](mailto:biocpostdocs@gmail.com)

### Abstract

Increasing temperatures and decreasing rainfall will pose a particular challenge to arid-zone birds which attempt to breed in summer, when the effort of maintaining energy and water balance is aggravated by severe heat and dehydration stress. High temperature and drought (associated with low food availability) are already known to correlate with reduced reproductive performance. However, the independent roles of temperature and resource availability in driving this relationship is not well known. To investigate this, I will study the reproductive ecology of the southern yellow-billed hornbill (*Tockus leucomelas*), while experimentally manipulating resource availability with supplementary feeding. This will involve quantifying patterns in body condition, breeding success, stress hormone production (feather corticosterone), body temperature ( $T_b$ ) regulation (continuous measurement of wild  $T_b$  using passive integrated transponders), immune function and development (assaying blood plasma for immune parameters), and behaviour of breeding pairs in the Kalahari Desert, South Africa. Correlating patterns in each of these traits with temperature, and comparing individuals from supplemented and non-supplemented nests, will enable me to isolate the environmental mechanisms driving variation in reproductive performance (temperature *versus* energy and water availability, or an interaction between them), as well as the proximate physiological and behavioural effects underlying that variation. Understanding how temperature and resource availability interact to affect reproduction in summer breeding birds is critical to assess their vulnerability to ongoing climate change, and make informed conservation management decisions.