

PHD position on the behaviour ecology of shorebirds in Madagascar

Behavioural ecology meets disease biology and immuno-ecology

1 PhD position (3 years), Bielefeld University (Germany) and University of Bath (UK)

Supervisors: Oliver Krüger, Nayden Chakarov, Joe Hoffman and Tamás Székely

Mating systems and parental behaviour are among the most diverse social behaviours, and recent research suggests that the social environment influences these behaviours. Small plovers (*Charadrius* spp.) exhibit highly variable breeding systems, between and within species, making them an ideal model system for studying the causes and consequences of sex ratio variation. The objective of this studentship is to investigate these fundamental issues by means of fieldwork in three plover populations in Madagascar. The research builds on the results from previous successful studentships working with these birds.

We seek a bright and highly motivated student with a keen interest in evolutionary ecology and behavioural ecology. Willingness to carry out fieldwork in a challenging tropical environment is essential for this position. The student will search for nests, trap birds and collect blood and other samples and record plover behaviour. In addition, they will use molecular methods in the laboratory for sexing and the genetic analysis of host-associated parasite communities. Previous experience of avian field biology or any other field experience in the tropics is very important, while experience of population genetic approaches and/or parasitology would be beneficial.

Fieldwork will be in a remote and pristine location in SW Madagascar. Facilities are extremely basic, the weather can be very harsh, and a great deal of walking and cycling are required. Opportunities for communication with the outside world are very limited. You must be physically fit, hard-working and meticulous, and have a proven ability to work independently. You must have a positive attitude and an ability to look after yourself (i.e. cook your own meals, deal with logistics and organise your own work over extended periods). Speaking French is advantageous, but is not a requirement.

The overall aim of the project is to study the immuno-ecological causes of sex ratio bias in three sympatric species of plovers with varying mating systems at a single location in Madagascar. At which stage of the life cycle and how do mortality differences between the sexes emerge, and what are the demographic consequences of these differences? We aim to experimentally manipulate parasite infections in plovers but also to monitor populations closely to identify the proximate causes of previously described adult sex ratio biases. In addition, the student will test hypotheses relating to mating system evolution, and develop demographic models to estimate key demographic properties of natural populations. Experience of statistical modelling and/or parasitological/immunological techniques is therefore advantageous and more generally, strong quantitative skills are highly desirable.

Key references

- Eberhart-Phillips, L. J., Küpper, C., Carmona-Isunza, M. C., Vincze, O., Zefania, S., Cruz-Lopez, M., Kosztolanyi, A., Miller, T. E. X., Barta, Z., Cuthill, I. C., Burke, T., Székely, T., Hoffman, J. I. & Krüger, O. (2018) Demographic causes of adult sex ratio variation and their consequences for parental cooperation. *Nature Comm.* **9**: 1651.
- Ancona, S., Denes, F. V., Krüger, O., Székely, T. & Beissinger, S. R. (2017) Estimating adult sex ratios in nature. *Phil. Trans. R. Soc. Lond. B* **372**: 20160313.
- Eberhart-Phillips, L. J., Küpper, C., Miller, T. E. X., Cruz-Lopez, M., Maher, K., dos Remedios, N., Stoffel, M. A., Hoffman, J. I., Krüger, O. & Székely, T. (2017) Sex-specific early survival drives adult sex ratio bias in snowy plovers and impacts mating system and population growth. *Proc. Natl. Acad. Sci. USA* **114**: E5474-E5481.

The student will be based at the Department of Animal Behaviour at Bielefeld University (www.uni-bielefeld.de/biologie/animalbehaviour.html). The Department is the oldest of its kind in Germany and currently hosts 7 Principal Investigators, 7 Postdocs and 15 PhD students. It offers a stimulating international environment and an excellent research infrastructure with access to state-of-the-art methodologies. The working language of the Department is English. The student will also have the opportunity to spend some time at the University of Bath (www.bath.ac.uk/bio-sci/biodiversity-lab/index.htm) in the United Kingdom. The project and the supervision will provide the student with an integrative training and will prepare him/her very well for a scientific career in behavioural ecology.

The studentship (E13/65%) is funded by the German Science Foundation (DFG) and is available for 3 years. Additional funding is available for fieldwork and for attending conferences. Please send your CV, the name of 2 referees, and a concise statement of your research interests as a single PDF file to: oliver.krueger@uni-bielefeld.de. For further information concerning this position, please contact Oliver Krüger (oliver.krueger@uni-bielefeld.de) or Tamás Székely (bssts@bath.ac.uk).

Bielefeld University is an equal opportunity employer. We welcome applications from severely handicapped people. We particularly welcome applications from women. Given equal suitability, qualifications and professional achievement, women will be given preference, unless particular circumstances pertaining to a male applicant predominate.

The deadline for applications is 30.09.2019.

Interviews will be held soon thereafter and the position is available as soon as possible.