



Two 6-month research projects available at University of Zurich (January-June 2027)

Department of Evolutionary Biology and Environmental Studies
Research group *Communication and Cognition in Social Mammals*

Project 1: Context-dependent vocal activity and flexibility in call usage in wild meerkats

Meerkats (*Suricata suricatta*) are highly vocal social mammals of Southern Africa. They are known to exchange information between conspecifics through various call types, emitted in different behavioural or environmental contexts. While most available studies focus on the function of a single call type within a specific context, this project aims to broaden our understanding of vocal communication in this species by investigating differences in vocal activity across behavioural contexts and by assessing the degree of functional flexibility in meerkats – that is, their ability to use the same call type across different contexts and extract different meanings depending on context, which is considered a prerequisite for studying the evolution of human language. This work is part of a broader research program, the NCCR Evolving Language, which aims to address these same questions across different mammalian species (meerkats, non-human primates, and human infants) and compare them in order to better understand the evolution of language.

The dataset consists of 20-minute focal follows of one individual combining audio recordings and behavioural, collected from wild meerkats across five groups at the Kalahari Research Centre, South Africa. Data collection spanned two years and covered the full meerkat active day, from emergence to return to the sleeping burrow.

The student will extract behavioural and acoustic data on the focal meerkats through video and audio recording annotation. Call types will be identified, and acoustic analyses will be used to extract acoustic features for each call type. Relationships between behavioural context and vocal activity or call-type usage will then be investigated through statistical analyses.

Skills gained: behavioural video coding using BORIS software; acoustic recording annotation in Adobe Audition; acoustic analyses in R and Praat; data management and statistical modelling in R; scientific writing based on a well-defined dataset from a long-term wild mammal study and contribution to a large interdisciplinary research programme.

Project 2: How do meerkat pups signal need? Acoustic dynamics of begging calls in a cooperative breeder

From 4 weeks of age, meerkat pups follow older individuals during group foraging and depend on prey provisioned by them. Pups solicit helpers with near-continuous begging calls. While the different types of begging calls and their influence on helpers' behaviour have been documented, variation in the begging calls' acoustic features with time, hunger level, or pup motivation, as well as their impact on food provisioning, remain poorly understood.

This project aims to investigate how the acoustic features of meerkat begging calls change over the course of a begging bout and how they are influenced by the pup's physiological state. The dataset consists of synchronised audio recordings and video focal follows of wild, habituated pups from different groups at the Kalahari Research Centre, South Africa, recorded at three times of day.

The student will extract behavioural data on pups and helpers through video annotation. Similarly, annotation of audio recordings will allow the labelling of begging calls, from which acoustic features will subsequently be extracted through acoustic analyses. Relationships between the extracted variables will then be investigated through statistical analyses.

Skills gained: behavioural video coding using BORIS software; acoustic recording annotation in Adobe Audition; acoustic analyses in R and Praat; data management and statistical modelling in R; scientific writing based on a well-defined dataset from a long-term wild mammal study.

Supervision: Dr Mathilde Martin, Dr Stephanie Kalberer and Prof Marta Manser

Both projects are desk-based in Zurich and involve no fieldwork.

Requirements: strong interest in animal behaviour and communication, basic R skills, good English. Previous experience with bioacoustics is a plus.

To apply, please indicate in which of the two projects you are interested in, and send a motivation letter and CV to mathilde.martin@uzh.ch before October 22, 2026.