contexts such as during their breeding activities, for territorial defense, dominance rank and mother-offspring interactions. The African elephant's (*Loxodonta africana*) nasal vocal tract is exceptionally elongated, compared to its oral vocal tract, and occupies a special position amongst mammal vocal production. Elephants are capable of producing a wide range of different vocalizations and are particularly famous for their commonly used "rumble" vocalization, a low-frequency and harmonically rich call type used in short-and long-distance communication. So far, however, acoustic research in the last 30 years strongly focused on females and next to nothing is known about male vocal behavior (besides the fact that they produce the so called 'musth rumble' when in musth), the structure and the information content of male vocalizations. Therefore we specifically incorporated social rumbles of adult males into the analysis applying the source and filter theory approach. Our recent findings demonstrate that the acoustic structure of male elephant social rumbles (in non-reproductive contexts) encode information about individuality, maturity (age/size) and sex (discriminating well from female calls) about the caller and seem to function as acoustic indicators to strength and body size for potential mating partners and competitors. In all analyses, formant frequencies were highly discriminative. Elephant rumbles are proposed to be used in long-distance communication context, but to what extend is the relevant social information about sex, maturity and individuality transmitted? We conducted re-recording experiments by using synthesized and manipulated rumbles to verify the extent of potential information transfer via long-distance communication and examine the persistence of this low-frequency vocalization in different habitats and environmental conditions. In this talk we will present first results and provide methodological insights into our perceptual field study.

White rhino olfactory communication and the potential for odor manipulation

Courtney Marneweck[1], Andreas Jürgens[2] & Adrian M. Shrader[1]
[1]School of Life Sciences, University of KwaZulu-Natal
[2]Chemical Plant Ecology, Technische Universität Darmstadt

Olfactory communication via urine, dung and/or scent glands is a key way in which many mammals transmit information, demarcate boundaries, find mates, and ultimately increase their reproductive success. Therefore, understanding olfactory communication can help conservation efforts related to threatened mammal species. Using white rhinos, we created a framework to investigate mammalian olfactory signals. We identified the specific dung odor profiles representing the age, sex, male territorial status, and female oestrus state of white rhinos. We then validated our findings with a behavioural experiment conducted on wild free-ranging white rhinos using synthetically replicated odors. Our results were encouraging and provide insight into how to potentially use odor signals to manipulate rhino behaviour. For example, by manipulating odors across the landscape, we might be able to create artificial boundaries that may prevent individuals from moving into areas where they would be at risk from humans. In addition, we might be able to increase relocation success and reduce conflict between translocated individuals and residents by manipulating the odor landscape prior to release. Finally, it may be possible to provide olfactory cues to captive rhinos (e.g. novel territorial male odors) that could potentially increase breeding success. In light of the current rhino poaching crisis in South Africa, the results of our study provide an innovative tool that could help with the conservation and management of both wild and captive white rhino populations.