InterMuc - a new collaboration research project dedicated to wild cats in Namibia and Slovenia

by the University of Ljubljana and the Leibniz Institute for Zoo and Wildlife Research

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Big cats, such as leopards and cheetahs have always aroused the interest of the general public and at the same time, they have an important ecological role in the ecosystems around the world. The relationships among these cat species remain poorly understood, although often several species share the same habitat. To fill this knowledge gap, we recently launched the new research project "InterMuc", which is dedicated to answer some open questions about the life of these secretive felids. Findings from Namibia will be compared with findings from lynx and wild cats in Slovenia.

The field work of "InterMuc" focusses on two study areas in two countries: 1) the Auas Oanob Conservancy and neighboring farms in the Khomas Highlands in central Namibia and 2) the Dinaric forests in southern Slovenia in central Europe. In addition, we include existing data from previous projects in other parts of the world, such as Altai (Mongolia), Sumatra (Indonesia), Iberian peninsula (Portugal and Spain), Anatolia (Turkey). In all these areas, several different wild cat species share the same habitat.

We primarily aim to improve our understanding of interactions between and within cat species. Thus, we focus on interspecific relationships (i.e. interactions between individuals of different species, e.g., cheetah-leopard) and intraspecific relationships (i.e. interactions between individuals of the same species, e.g., leopard-leopard). These relationships often determine where particular species can survive and at what densities they occur. The two main research methods are: 1) capturing and fitting GPS collars on several cat species in the same area (Figures 1 and 2), setting up camera traps at scent-mark sites and at fresh kill sites (Figure 3a) and collect additional surrounding environmental information (Figure 3b) to monitor the behaviour of cats at these sites (Figures 4 and 5). By closely monitoring their movements, we investigate which individuals of the same or different species are attracted to or avoid each other. Below we provide further information on the Namibian part of the project.

Figure 1: A satellite GPS collar is carefully attached to a female leopard during an immobilisation.

Photo credit: Katharina Moser

Figure 2: Sub-adult leopard male L116 during immobilisation. The animal is weighed, measured and sampled. Photo credit: Katharina Moser

Figure 3a: A camera trap is set to monitor a leopard kill-site.

Figure 3b: During the visit to the kill-site, information on exact location and vegetation structure is recorded to model the habitat selected by leopards to successfully hunt.

Figure 4: Leopard kill sites are monitored by camera traps. In this image an adult female is recorded while feeding on an oryx carcass that she previously killed.
Photo Credit: InterMuc Project

Figure 5: Sometimes camera traps give us a nice insight into cat's life. Here a young leopard male was photographed while playing with food.
Photo Credit: InterMuc Project

Studying leopards and cheetahs in central Namibia

Research in the Khomas Highhlands is conducted in collaboration between the Leibniz Institute for Zoo and Wildlife Research (Leibniz-IZW) in Germany, the University of Ljubljana in Slovenia, and the Auas Oanob Conservancy in Namibia. Currently, we focus on trapping leopards and cheetahs to equip them with satellite collars and GPS telemetry collars, respectively. To capture leopards, we use electronic box traps monitored by GSM-GPRS or satellite communication (Figure 6). Cheetahs are captured with the same method but box traps are placed at cheetah marking trees. The capturing and collaring of cheetahs is conducted as part of the long-term Cheetah Research Project of the Leibniz-IZW.

Figure 6: Electronic traps monitored by GSM/GPRS or satellite communication are used to efficiently capture free-ranging leopards. Photo credit: Ruben Portas

In the first five months of the project (April to August 2021) we managed to capture six leopards (two males and four females) and five cheetah units (one male coalition of three males, one solitary male and one female). We equipped four leopards (Figures 1 and 2) and all cheetah units with GPS telemetry collars. Based on the data collected during the previous leopard project by the Leibniz-IZW (see also Roan News issue 2014), the satellite collars were programmed to record data during the leopard peak activity times, i.e. during dawn and dusk (Figures 7, 8a and 8b). All leopard and cheetah collars record GPS locations at the same times, thus allowing us to monitor potential encounters and avoidance in space and time to better understand intra- and interspecific interactions between the animals.

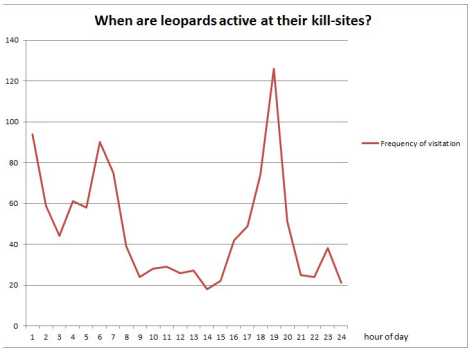
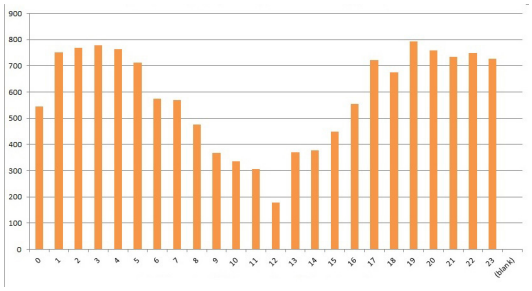
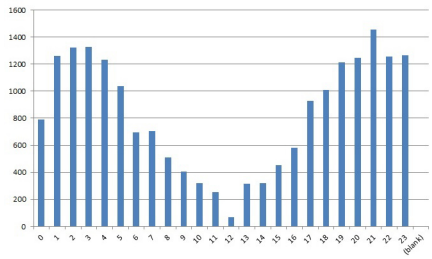


Figure 7: Time when leopards are most likely to be active around kill-sites. The dataset includes 1,145 GPS locations of 6 leopards taken at their kill-sites.





Figures 8a and 8b: Average speed (meters/hour) leopards walk each day giving a clear indication when leopards are most active. This information was crucial to schedule our GPS satellite collars. The figure 8a (orange bars) shows the average speed leopard females walk per day and it was estimated using 173,154 GPS locations from 9 female leopards while the figure 8b (blue bars) shows the same for male leopards using 83,532 GPS locations from 6 leopard males.

Collecting telemetry data of leopards also allows us to identify clusters of GPS points which usually indicate a leopard kill site. We visit these potential kill sites to search for prey remains that would confirm a predation event. If we find prey remains, we identify the prey species and try to assess the sex and age of the animal. Our preliminary results suggest that oryx, greater kudu, steenbok and warthog are the most common prey of leopards in the Khomas Highlands. We are also investigating human-leopard conflicts and assess to quantify the percentage of livestock prey in the leopard diet (Figure 9).

The "InterMuc" project is running until December 2022. By then, we hope that our new and previously collected data are comprehensive enough to provide first insights into how these large cats coexist and communicate among each other and what the main prey species of leopards are.

Additional information about the "InterMuc" project is available on the website:

https://intermuc.splet.arnes.si

We are grateful to the farmers of the Auas Oanob Conservancy of the Khomas Highlands for their interest and support of our project. We are also grateful to the Slovenian Research Agency (ARRS; grant no. N1-0163) for funding the "InterMuc" project and to the IZW and the Messerli Foundation for funding the long-term Cheetah Research Project.

Figure 9: Human-leopard conflict is a common challenge in Namibian farmland. The picture shows a calf killed and hung on a tree by a male leopard. Still, the farm owner supports the project and is willing to capture, collar and release the leopard back on his farm.
Photo credit: Miha Krofel