Project Updates: December 2022

Introduction
During this quarter, camera traps were deployed in the western part of the park along the park edge. The main objective is to understand the dynamics of native carnivores along the park and the exposure of livestock from local communities. We managed to survey all sites using similar camera traps and we kept the sampling period to 40 days.

Data collection
In total, we have retrieved 48 camera trap locations out of 61 locations making a capture success of 78.7%. Forty-seven camera traps functioned properly, three were stolen, three damaged but not stolen, while eight failed to work during the sampling period. Initially, the sampling design consisted of surveying different points along the park boundary at a relatively 1-km interval between two consecutive camera trap locations. In addition, at each site we collected additional information, including the crop types and livestock animal found around the site. We were also interested to know the vegetation type inside the park in 100 m radius, as well as the land use in the vicinity. We had also to estimate the nearest distance to neighbouring settlements.

The sampling period started on 30th April 2022 and was completed on 14th November 2022 using in total 27 camera trap units. To survey all 61 sites, we had to redeploy the same camera traps in other locations to complete the entire park boundary of around 62 km long. We used the Reconyx Hyperfire model HC500 and PC800, mounted on a tree 40-50 cm above ground level, at the park edge. Some cameras were set facing the park interior while others were facing outside of the park depending on the site. The cameras were set to capture three consecutive shots each time they were triggered without delay and continued taking photographs until the animal left the field of vision – making different events and when there is no animal passing, the camera does not work. However, there are sometimes false triggers that result in blank images.

Images categories
At the end of the sampling period, memory cards were recovered, species identified, and all photographs were imported into specialised software Wild.ID software (TEAM Network, 2018), which is free open-source application for image annotation. A total of 108,450 images was identified and were grouped into 6,512 different sequences or events.

There are four categories of photographs, including wildlife, domestic animals, humans and blank images. Wildlife images account for 4,402 events, equivalent to 68%, followed by blank images with 900 events or 14%, human images with 696 events or 11% and domestic animals with 438 events or 7%, the rest of 78 events is attributable to setup/pickup or 1% of the total.

Carnivore community
A total of 721 events were recorded for carnivores, including six native species and one non-native species. The native carnivore species identified, include the side-striped jackal (*Canis adustus*), the serval cat (*Leptailurus serval*), the African golden cat (*caracal aurata*), the servaline genet (*Genetta servalina*), common slender mongoose (*Herpestes sanguineus*) and spotted hyena (*crocutta crocutta*). In

addition, we found the domestic dog (*Canis lupus familiaris*) which is a non-native carnivore to the area. In terms of proportion, the side-striped jackal represented 63.5% of total events, followed by the domestic dog with 23.7% of total carnivores, the serval cat with 9% of total carnivores, the African golden cat with 2.4% of total carnivore and rest of carnivores (hyena, mongoose, and genet) represent less than 1% of total carnivore community.

Regarding the carnivore distribution, we have found that at least one native carnivore was photographed at 44 camera trap locations out of 48 locations, which is equivalent to 93.6% presence, when applied to the entire park, it is lowered to 72.1% distribution.

Domestic animals
Our camera traps captured different livestock that were mainly grazing in the area outside the park, where some of the cameras were deployed. These include the cattle, goats, sheep and rabbits. This is an indication that the livestock also use the edge of the park.

Species diversity
A total of 16 animal species together with four species of livestock were identified. The identified images belong to15 different families. The Bovidae ranks higher with a total of 3,597 events, followed by Hominidae with 758 and Canidae with 629 events and Cercopithecidae with 371 events. Below is the list of different species identified:

(a) Native carnivores

1. Side-striped jackal, *Canis adustus*
2. Serval cat, *Leptailurus serval*
3. African Golden cat, *Caracal aurata*
4. Common slender mongoose, *Herpestes sanguineus*
5. Servaline genet, *Genetta servalina*
6. Spotted hyena, *Crocutta*

(b) Exotic carnivore

1. Domestic dog, *Canis lupus familiaris*

(c) Other wildlife

1. Cape buffalo, *Syncerus caffer*
2. Bushbuck, *Tragelaphus scriptus*
3. African brush-tailed porcupine, *Atherurus africanus*
4. Black fronted duiker, *Cephalophus nigrifrons*
5. African elephant, *Loxodonta Africana*
6. Carruther's mountain squirrel, *Funisciurus carthersi*
7. Handsome francolin, *Pternistis nobilis*
8. Mountain gorilla, *Gorilla beringei*
9. Golden monkey, *Cercopithecus mitis kandti*

(d) Livestock

1. Goat
2. Sheep
3. Cow
4. Rabbit

Challenges:

- Camera trap unit theft impacted on the data acquisition in the western part of the park.
- Data entry took long because there were many photographs to go through and make proper recording – data entry is going on; we use a quick method of grouping all sequences to be able to make this short report.

Conclusion:

During this phase, we have been able to complete data collection on all sites, and all the images were uploaded for identification. We have identified six native species of carnivores that use the park edge, and we were excited to find the spotted hyena which is a powerful carnivore. One of the objectives of this project, related to documenting the carnivore community using the park edge was attained. We shall continue in-depth data analysis to respond to other objectives through occupancy modeling and activity patterns soon. Finally, this is to note that the images of humans (rangers, tourists, poachers, or people from the community) were deleted from our database, but information associated with them was kept.

Top: Spotted hyena, Crocutta crocutta. Bottom: Domestic dog.

Left: Servaline genet, Genetta servalina. Right: Slender mongoose, Herpestes sanguineus.

African golden cat, Caracal aurata.