To the Jana Robeyst Trust

Georgia Troup project update

I would like to sincerely thank the Jana Robeyst Trust for helping to fund my PhD research investigating human-elephant conflict in Tsavo, Kenya. I have now completed my 2 years of fieldwork, and have returned to Australia for the following year to write my thesis. Below is a short report of the work I completed since receiving my grant from the Jana Robeyst Trust in October 2017.

Crop-raid assessments

Each time a farmer informs the Elephants and Bees Project of a crop-raid at their farm, I headed out with a staff member to assess the damage. Information on the crops consumed, crops avoided, as well as the specific part of the crop species consumed were recorded. Elephant hind footprint measurements are taken to estimate age, and between farmer observations and tracking exit and entry points, the number of elephants involved in the raid is estimated. I collected samples of crops consumed by elephants, as well as elephant dung left behind, for nutritional analysis of nitrogen (a well-known indicator of diet and forage quality). As detailed below, we have surprisingly experienced very few elephant crop-raids during this part of the study, however I was able to carry out 32 crop-raid assessments in Sagalla.

Photos: (L) Farmer Lawrence shows us the destruction of his house caused by hungry elephants during, **(R)** Farmer Nashon excitedly shows off his impressive chilli's nearly ready for harvest.

December 2017/January 2018 crop-raids

Over the December 2017/January 2018 period, communities in Sagalla experienced an extraordinary wave of marauding elephants, very similar to that seen at the same time the previous year in the Mwakoma and Mwambiti villages worked in by the Elephants and Bees Project. An estimated 200 elephants wandered freely through the communities, causing mayhem and heavily disrupting the lives of the local people. Like the previous year, investigation into the chaos lead us to conclude that the elephants had likely come from Tsavo West N.P. (the Elephants and Bees Project is located in Mwakoma village, bordering Tsavo East N.P.), where large numbers of illegal cattle grazers potentially

drove the elephants out. Elephants stumbled into the farming community of Sagalla, tried to pass through, but were obstructed by the newly-constructed Standard Gauge Railway separating Tsavo East and Tsavo West National Parks. Unsure of how to get back to Tsavo West N.P., the elephants became trapped in the village farms while they searched for a way out. I collected samples of all species of consumed crops found in three Mwakoma farms and two Mwambiti farms, in addition to 23 elephant dung samples, for nutritional analysis over the next few months.

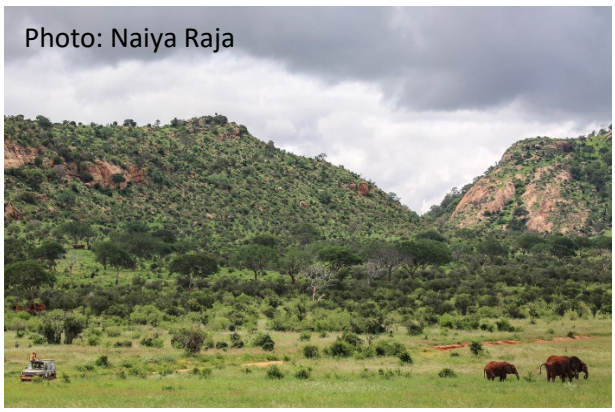
Long rains (March/April 2018)

The following rainy season arrived March, which marked the beginning of the next crop season. Thankfully the rain came in full force, and all of our farmers were able to harvest bags and bags of crops – the biggest harvest they've seen in several years. Surprisingly, this crop season didn't see a single elephant crop-raid in Sagalla. We were certainly expecting to see elephants in our community as crops began to mature, so we are not sure exactly what stopped them from coming. One possibility is that the significant rains in Tsavo resulted in the natural forage inside Tsavo East N.P. being of high enough nutritional quality to keep the elephants content inside the Park boundaries. This is one of the many reasons why we need to develop a better understanding of crop-raiding - it can be very unpredictable!

Field observations in Tsavo East N.P.

When crop-raiding did not occur, I collected data on the foraging behaviour and social composition of wild elephants observed in neighbouring Tsavo East N.P. I aimed to observe a focal individual's foraging behaviour for one hour, then collected a sample of the most common grass species and most common browse species she observes to be consumed. In addition, I opportunistically collected fresh elephant dung samples, totalling 104 plant samples and 249 dung samples. Dung and plant samples will be analysed for nitrogen (an indicator of diet quality) in the following few months. These results will then be compared to those from the nutritional analysis of crops and dung collected at farms in Sagalla, to create a diet quality map of our study area and help us better understand the nutritional motivation for crop-raiding by elephants in Tsavo.

I have also been studying the physiological stress responses of elephants to decreasing wild forage quality and crop-raiding activity. I collected 98 elephant dung samples to do this: 41 dung samples from Tsavo East N.P. in the 'wet' season (April/May), 30 samples from Tsavo East N.P. at the height of the dry season (September), and 27 samples from Rukinga Wildlife Sanctuary (surrounded by farmland) during the dry season. These dung samples will then be sent to the Smithsonian Conservation Biology Institute in the U.S., where they be analysed for glucocorticoid metabolites (stress hormones). Results will be compared between the wet season and dry seasons in the different locations, to enable us to better understand the stress response of elephants in a drought-prone, anthropogenic landscape.



Photos: I conduct elephant foraging behaviour observations in Tsavo East N.P., then collect samples of the most commonly consumed grass and browse species consumed.

Research and field experience for local staff and International/Kenyan interns

Whenever I travelled into Tsavo East N.P. to collect data on elephant foraging behaviour and social composition, I required the help of a field assistant. This provides a fantastic opportunity to teach local Kenyan staff basic skills in elephant behavioural research, and give them the chance to spend time with and appreciate their unique wildlife, which they are often unable to do. International interns are also given the opportunity to develop the same skills, and leave with an insight into field research that will hopefully help inspire their conservation dreams in the future.

Photos: Local Elephants and Bees Project interns Duncan **(Top L)**, Rachel **(Top R)** and Luciana **(Bottom L)** assist me in Tsavo East N.P. Elephants and Bees' staff members Emmanuel, Nzumu and Grace join me for a day in the Park to celebrate completing my data collection **(Bottom R)**

With sincere thanks and best wishes,

Georgia Troup