

The Rufford Foundation

Final Report

Congratulations on the completion of your project that was supported by The Rufford Foundation.

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. The Final Report must be sent in **word format** and not PDF format or any other format. We understand that projects often do not follow the predicted course but knowledge of your experiences is valuable to us and others who may be undertaking similar work. Please be as honest as you can in answering the questions – remember that negative experiences are just as valuable as positive ones if they help others to learn from them.

Please complete the form in English and be as clear and concise as you can. Please note that the information may be edited for clarity. We will ask for further information if required. If you have any other materials produced by the project, particularly a few relevant photographs, please send these to us separately.

Please submit your final report to jane@rufford.org.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details

Your name	Aaron Onserio
Project title	Small Carnivores Of The Mau Forest: Conservation, Ecology And Conflict
RSG reference	22311-1
Reporting period	July 2017 – July 2018
Amount of grant	£4999
Your email address	Onserio44@Gmail.Com
Date of this report	17 th August 2018

1. Please indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

Objective	Not achieved	Partially achieved	Fully achieved	Comments
Camera trapping of small carnivores across different habitat types and land use				Thus far, a total of 3,152 pictures of mesocarnivores were recorded. From the pictures, 14 species are identifiable and these include: the Servaline genet (<i>Genetta servalina</i>), Egyptian mongoose (<i>Herpestes ichneumia</i>), Honey badger (<i>Mellivora capensis</i>), caracal (<i>Caracal caracal</i>), serval Cat (<i>Leptailurus serval</i>), African civet (<i>Civettictis civetta</i>), white-tailed mongoose (<i>Ichneumia albicauda</i>), slender mongoose (<i>Galerella sanguinea</i>) large-spotted genet (<i>Genetta maculatta</i>), side-striped jackal (<i>Canis adustus</i>), striped polecat (<i>Ictonyx striatus</i>), Cape clawless otter (<i>Aonyx capensis</i>), palm/tree civet (<i>Nandinia binotata</i>), and the Near Threatened Jackson's mongoose (<i>Bdeogale jacksoni</i>). We believe that all the small carnivores present at the Mau Forest Complex have been recorded by our camera-trap sampling.
Dietary analysis of captured small carnivores from faecal samples				Capture success of small carnivores was relatively low and we only managed to capture 1 individual of our major target, the African palm civet and no servaline genets. There were not enough faecal samples from the live trapping to analyse diets, especially for the targeted frugivores (n = 1). Challenges including the unpredictable breakdown of the field vehicle and weather made it difficult to access the far-flung and remote areas of Mau Forest.
Public education and community outreach				This exercise did not take place fully; we were unable to combine fieldwork with public education and community outreach. We were hoping to reach 15 schools and 15 community schools. This objective will go on in the next funding phase. Additionally, we trained and worked with 15 students from Maasai Mara

			<p>University in the field who gained field experience and were educated on small carnivores and their importance and the need to conserve the Mau Forest Complex. Together with my advisor, Dr Adam Ferguson from the Field Museum of Natural History (Chicago, Il., USA), we have developed a handout on the Mau Forest mesocarnivores using the Field Museum Field Guides program/template http://fieldguides.fieldmuseum.org/ to help raise awareness of these species among the local communities</p>
Assessment of attitudes/knowledge/conflicts with small carnivores			<p>Comprehensive questionnaires have been printed and are ready for use in the coming months to investigate human – small carnivore conflicts. We will employ students from Maasai Mara University and an assistant from the local community to help with community surveys.</p>
Live trapping of small carnivores across different habitat types and land use			<p>We completed three expeditions to live-trap small carnivores, totalling to 325 trap nights. One of our main target small carnivore species, the palm/tree civet was captured in one of our live traps. Our large and serviceable 4WD field vehicle that otherwise had no issues, was broken down on several occasions. This presented logistical challenges of accessing far-flung and remote areas of the Mau Forest Complex. Setting traps in the impenetrable and topographically complex regions was extremely difficult due to limited accessibility. Unfortunately, given the wet weather and the inaccessibility of some of the remotest parts, field trips were either postponed or cancelled altogether, delaying the project progress.</p>
Tree Nursery			<p>We were hoping to run this activity with the schools around our study areas but the schools' academic calendar does not allow for much extracurricular activities.</p>

2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

The major difficulty we encountered was the unexpected breakdown of our field vehicle, which curtailed the whole activity of live trapping and we hope to continue

with this activity in the next funding phase. Consequently, we were forced to hire motorbikes for camera trapping (e.g., setting cameras, replacing camera batteries and during collection of SD Cards from deployed cameras for analysis). Unfortunately, given the extremely wet weather and the inaccessibility (on motorbikes) of some of the remotest parts, field trips were either postponed or cancelled altogether, delaying the project progress. In addition, the prolonged election period in Kenya, precipitated some tensions in the project area, with advisories by the local Kenya Forest Service and Kenya Wildlife Service personnel against camping in designated camping sites for the live trapping exercises.

3. Briefly describe the three most important outcomes of your project.

- i. A total of 3,152 pictures of small carnivores were recorded. From the pictures, we identified 14 species of small carnivores (see above list) as well as images of large carnivores (spotted hyena *Crocuta crocuta*), domestic carnivores (domestic dog *Canis familiaris* and domestic cat *Felis silvestris*), and a diversity of mammal/bird species. Despite the Mau Forest Complex facing a lot of destruction, our study revealed that it still harbours many species of small carnivores and possibly other fauna, and so underlies the need to conserve the forest.
- ii. This study recorded small carnivores of conservation concern like the Jackson's mongoose (*Bdeogale jacksoni*) as well as rare species in Kenya such as the palm civet and servaline genet. According to the IUCN Red list, Jackson's mongoose is documented as a Near Threatened species. This is the first confirmed record of this species in the Mau Forest. In Kenya, this species has only been recorded from forested regions including the Aberdares, Mount Kenya, Elgeyo Forest, Yala River, and near Nyeri and Naivasha.

We were able to capture our target species (palm civet and the servaline genet) in our live trap and camera trap respectively. Biological samples were collected from the palm civet. These species were only captured in the pristine part of the forest (i.e., interior of Transmara block). Palm civet is the only member of the family Nandiniidae. Apart from the Mau, this species has only been recorded in the Kakamega and Elgeyo Forests in Kenya.

- iii. Using actual camera trap images from the Mau Forest, we have developed a field guide of the Mau Forest small carnivores using the Field Museum Field Guide programme <http://fieldguides.fieldmuseum.org>. This is the first field guide for small carnivores to ever be produced in Kenya and will be distributed to all communities and primary schools where we worked.

4. Briefly describe the involvement of local communities and how they have benefitted from the project (if relevant).

Since the project was the first of its kind local communities had never understood the ecological and economic importance of small carnivores and the Mau Forest at large. This will be continued with the second funding phase. However, the biggest

community sensitisation group were the Maasai Mara University students. The students benefited from the training and through active participation in field activities. They, together with the local communities, now identify and understand small carnivores as a faunal group that is important to conserve. In addition to students, we worked with Kenya Forest Service rangers and community members while trapping in the Transmara, helping to raise awareness of the diversity of small carnivores inhabiting the forest.

5. Are there any plans to continue this work?

Yes! We are planning on scaling up some of the activities and initiate some more so as to enhance the long-term conservation of threatened Mau Forest and the small carnivores in Kenya.

During the live trapping exercise, we captured only a single palm/tree civet, indicating that this species does occur at the Mau Forest Complex. Therefore, there is need for continued surveys, via the live-trapping programme, for this species and others to obtain enough samples for dietary analyses and/or seed dispersal studies.

The public education and community outreach programmes need to be continued and sustained to improve understanding of small carnivores and the Mau Forest ecosystem as well as dispel myths and traditional beliefs about small carnivores among local communities.

6. How do you plan to share the results of your work with others?

We plan to hold seminars with wildlife stakeholders (Kenya Wildlife Service, Kenya Forest Service and the National Museums of Kenya), including amongst the local communities, to specifically demonstrate the link between the small carnivores and forest regeneration in the forest ecosystem. A full report of the 1-year project will be presented to the Kenya Wildlife Service, Kenya Forest Service and the National Museums of Kenya. With more data, we will publish the work in an international peer-reviewed Journal.

7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?

The project took 12 months but some activities like public education and community outreach need to be continued and sustained to help change local and public perceptions about small carnivores across the Mau Forest and its surroundings.

8. Budget: Please provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in £ sterling, indicating the local exchange rate used.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Artist fee for drawing species/ designing poster	233	0	233	We did not commission an artist to draw the poster, but instead used the Field Museum Field Guides to generate outreach products. Balance used to purchase extra live traps.
Printing posters (Each)	109	100	9	Balance used to top up activities e.g. community members' allowances and the KWS security escort
Bait-chicken necks (per kilogram of 20)	74	45	29	Balance used to top up activities e.g. community members' allowances and the KWS security escort
Bait-beef (per kilogram)	149	129	20	Balance used to top up activities e.g. community members' allowances and the KWS security escort
Batteries (AA, 4 pack Duracell)	698	698	-	
SD Card (16 GB)	151	151	-	
Smart phone/ Tablet for digital questionnaire	310	0	310	Balance used to purchase extra camera traps to replace those damaged in the field.
Petrol	1240	1240	-	
Community member field assistant allowance	465	698	233	We had to increase the number of community members in the field to fasten the field exercise and boost the security in the tense areas of our project site. Some money that was to be used to buy equipment for dietary analysis activity was supplemented in this section.
Kenya Wildlife Service escorts allowance	930	1395	465	The prolonged election period in Kenya, precipitated some tensions in the project area, with advisories by the local Kenya Forest Service and Kenya Wildlife Service personnel we were forced to increase the number of the KWS officers to boost our security in the field.

9. Looking ahead, what do you feel are the important next steps?

As mentioned in section 5 of this report, some of the objectives of the project were not fully accomplished. Given the low capture rate of targeted frugivores and their

limited distribution to only a single surveyed forest patch, it seems necessary to more explicitly address the impacts of anthropogenic disturbance on forest-dependent mammalian taxa across the Mau Forest Complex. Camera traps seemed to be much more effective at capturing these and other species as well as human activity in different parts of the forest and expanding our camera-trapping efforts into different tracts of the Mau Forest could help generate a bigger picture of the threats facing this ecosystem. Public education and community outreach need to be continued to help change the community's perceptions on small carnivores.

Implementing questionnaires on small carnivore-human conflict will enable us to collect data relevant to management strategies as well as sensitisation of the community. The latter is key in informing the conservation management of the species in areas where they forage and disperse.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did The Rufford Foundation receive any publicity during the course of your work?

RF logo was used on the posters. We will also duly acknowledge the Rufford Foundation for funding our activities when we prepare articles for newsletters and publications in the near future.

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

Advisors

Adam W. Ferguson

Paul W. Webala

Community members who were helping us in the field both in live trapping and camera trapping

Felix Kipchumba

Gertrude Ruhu

Eugene Mbogholi

Audrey Cheron

Maasai Mara University Students who consistently assisted us in camera trap activity.

Elkanah Kikirui

Benson Muyeyia

Lawrence EtheKon

Beatrice Gaita

Purity Achieng'

Rodgers Odhiambo

Marius Achila

Gabriel Kinyanjui

Eunice Mumbi

Ann Nderitu

Forest Services Officers who accompanied us to the field and offering security to us;

Martha Wegesa

Felix Mukolwa

Harrison Nderitu

Elias Bwoma

Wilson Chirchir

Alex Muthui

12. Any other comments?

We are very grateful to the Rufford Foundation for the invaluable support, without which this work would not have been possible. Since this project was the first of its kind in the Mau Forest ecosystem, further support is needed to maintain the momentum of conservation of small carnivores and other mammals in the Mau at large.