The Rufford Small Grants Foundation

Final Report

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

We ask all grant recipients to complete a Final Report Form that helps us to gauge the success of our grant giving. 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. 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	Mamadou Daha Kane
Project title	Population abundance, density, and habitat analysis of the large carnivore species of the Niokolo Koba National Park in Senegal
RSG reference	13202 - 1
Reporting period	January 2013 – July 2014
Amount of grant	£5800
Your email address	mdkane@vt.edu
Date of this report	08/15/2014

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		✓		I planned to conduct three camera trapping sessions in three sample areas within the park but I finally conducted only two. This is due to on one the hand by the late start of the fieldwork (February 4th 2013 instead of early January as planned) and on the other hand the early settlement of the rainy season (first week of May 2013). At the peak of the rainy season (July), the trails of the park are not passable.
Scat sampling			✓	As we planned to collect scat within the camera trapping grids, we consider that objective as fully achieved. However, we were not able to collect a sufficient amount of scat to estimate population abundance and densities of the species of interest. In the near future, we plan to work with American Museum of Natural History and other researchers who collected felid scat samples in the park to make a publication on Niokolo Koba lion and leopard genetic diversity
Microhabitat sampling			✓	This objective was fully achieved as we conducted micro-habitat sampling in the 58 camera trap locations (28 in the first site and 30 in the second) within the park

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

The most significant difficulties we had were the delay in the fieldwork and the early settlement of the rainy season. We planned to start in early January in order to have three camera trap sessions before the peak of the rainy season when the trails ' drivability is fully reduced. In addition, some of the trails where we planned to set up camera stations during the first and the second session were not passable, and therefore we had to adapt, either by clearing or by replacing them with other trails. The rainy session kicked off in early May and was at its peak in the last week of June 2013, making it difficult for us (and the park staff) to move. We also faced some camera thefts (two stations) in the first camera trap grid in Linguekountou that we could not replace.

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

The most three important outcomes of the project were (i) the estimation of lion, leopard and serval population densities and abundances from camera traps; (ii) the estimation of occupancy and co-occurrence of the three species, and (iii) the confirmation of the Niokolo Koba National mammal diversity.

We estimated lion, leopard and serval population densities and abundance from camera trap data using different methods. We used two traditional capture-recapture techniques (Program CAPTURE and MARK) to estimate population abundance of leopards and servals; then we estimated the effective trapping areas of each of the two species using both the full mean maximum distance moved (MMDM) and half MMDM to calculate their respective density within the park. We also used two spatially explicit capture recapture methods implemented under SPACECAP and DENSITY to directly estimate their density. For lions, we used Mark-Resight model (Non-spatial method) implemented in programme MARK to estimate abundance and we estimated the effective sampled from both full and ½ MMDM to derive lion density. In addition, we used spatial mark-resight to directly estimate lion density. This study has provided the first abundance and density estimates for servals from camera-trap studies anywhere, and the first for lions and leopards via camera trapping from West Africa, and the first for lions using non-spatial and spatial mark-resight models

We also used an occupancy modelling framework implemented in program PRESENCE to examine habitat use of lions, leopards, and servals in the NKNP from camera-trap data. We utilised both single-species and two-species modelling in relation to some habitat variables and prey availability.

During the two camera trapping sessions, we photographed 36 different mammal species, among which African wild dogs, Derby eland, caracal and elephants. The two latter species haven't been photographed or seen in the park for at least 15 years.

All these results will be presented in three publications that we plan to make during the course of 2014 and 2015.

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

This project didn't involve local communities as all its activities were conducted in the core of the protected area.

5. Are there any plans to continue this work?

We plan to continue this work by extending it to other species and other areas within and outside the national park to gather more information about population dynamics and habitat use. We believe that collecting more information will help us have more precise results and therefore draw more reliable conclusions for a better management of the park.

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

All the results of this project will be presented in at least three publications that we plan to make during the course of 2014 and 2015.

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

The RSG was used during the second camera trapping session (From May to July 2013) to acquire batteries, gas, film rolls, film printing and to pay personal. These funds were crucial for the completion of this project that was highly dependent on fund availability.

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
Personal	3200	2022	+1178	We made some provisions to save some money for batteries, and film rolls for the film cameras.
Gas	1400	1281	+119	
Film rolls	0	744	-744	
Batteries	0	1483	-1483	
Film printing	1200	298	-298	
TOTAL	**5800**	**5828**	**-28**	

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

One of the most important step is to acquire more digital cameras in order to cover a larger area in and outside the park.

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

I used the RSGF logo in my thesis seminar presentation in July 2014 and I plan to use it in all printed materials pertaining to this project.

11. Any other comments?

I would like to deeply thank the RSGF for giving me the opportunity to conduct this project. Their support was crucial for the completion of this project. Large carnivores are understudied in West Africa and we believe that this study will contribute to add more knowledge on West African carnivore communities.