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	Yadok Biplang Godwill
Project title	Ecology of the African giant pouched rat (*Cricetomys* sp): implications for seed dispersal and conservation of large-seeded species
RSG reference	18801-1
Reporting period	January 2016 – January 2017
Amount of grant	£4,960
Your email address	Biplang2006@gmail.com
Date of this report	20th January 2017

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
1. To determine density, population size and home range of African giant pouched rats (*Cricetomys* sp.) in Ngel Nyaki forest				Sixty-four traps were used in an 8 x 8 grid in each of three forest sites. One grassland, and two forest sites. The gallery forests could not be sampled because they were too narrow for the grid. Estimated rat density was 5.97 rats per ha, there were 4474 rats within the largest continuous forest patch of the reserve (about 7.5 km^2). Unfortunately, the home ranges could not be worked out as estimates were unrealistic.
2. To determine seed removal rates and seed preference of African giant pouched rats (*Cricetomys* sp.).				Only *Carapa oreophila* seeds were used in 2016 because other targeted seed species were not available in sufficient quantities and there was a need to use artificial seeds.
3. To assess the perception of host communities on the existence of African giant pouched rats in Ngel Nyaki forest				This was carried out by the use of questionnaire surveys, I surveyed two villages that were closer to Ngel Nyaki forest —Yelwa and Dujire. We had 120 respondents in Yelwa and 80 respondents in Dujire. Maisamari village was not assessed because an approval was not given
4. To create awareness on the need for conservation of Ngel Nyaki forest				The creation of awareness was carried out in two forms, one was during the questionnaire survey and the other was by giving information to school children in primary and secondary schools of Yelwa and Maisamari villages.

5. To determine species with severe dispersal limitation in Ngel Nyaki forest				At the moment, we have compiled data for seed species that are dispersed by chimpanzees, putty-nosed monkeys, olive baboons, Tantalus monkeys and most recently the African giant pouched rats. Since the data on bird and bat-dispersed seeds are still scarce, it is difficult to analyse the data but there are plans by collaborators of NMFP to carry out those research very soon.

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

In the course of the project, I encountered a few unforeseen challenges, these difficulties are as shown below;

i. Laying out the live traps in grids — a lot of difficulties were experienced in laying 64 traps in an 8 X 8 grid because of the undulating terrain and abundance of lianas and understory shrubs in some part of the forest. Machetes were used to create paths in the forest where necessary and the GPS coordinates of the trap locations were cross-checked in QGIS.

ii. Full moonlight phase — the number of capture events in the first session (5 days) of the experiment was very low and did not correspond to a previous pilot study carried out in the same place. After a lot of searches, the full moon phase of the month was hypothesised to be the most likely factor. Subsequent capture-recapture experiments which yielded a high number of captures were carried out in the when the moon was not at its fullness phase.

iii. Difficulty in finding seeds— Most of the targeted seed species that were to be used for the experiment were not available in sufficient quantities during the experiment, probably because 2016 was not a seed rich year for many of the species as evidenced in NMFP plant phenology data. However, the seed removal data from 2014 and 2015 were used to investigate foraging behaviour of African giant pouched rats. From the merged data, probabilities of hoarding, predation, neglecting seeds as well as dispersal distances and survival estimates of dispersed seeds were estimated

iv. Heavy rainfalls — Heavy rainfalls were experienced in the course of our experiments on seed removal in the field. Sometimes observations and data collection were delayed for hours. Raincoats and gumboots were purchased to ameliorate the difficulty that came with the field observations in the rains.

v. Unwillingness to answer questions – At the beginning of our questionnaire survey, it was noticed that the respondents were unwilling to answer the questions truthfully especially when the questions touched on wild animals in Ngel Nyaki forest. There was some form of fear that they would be arrested. Having noticed that fear, we started our interaction by assuring them that we are not forest guards but scientists looking for ways to help their communities, although our influence may not be as direct as they would want. We became friendlier in our interaction. Language barrier was not a big problem because most of the questionnaire administrators spoke Fulfulde very well

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

The three most important outcomes from the project are as follows

1. The density of African giant pouched rats was determined in the Ngel Nyaki forest. The estimated density of the rats was 5.97 rats per ha and the population size of the rats in the largest continuous patch of the forest (7.5 km^2) was 4474 rats. In addition, the density of the rats was not equal in the two forest sites used as one was two times higher than the other. Because the capture events in the grassland were very low (one rat captured three times), it was not feasible to determine the density of the rats in the grassland.
2. Seed size was not a major factor in seed choice and dispersal distances of seeds predated by African giant pouched rats.
3. Despite the difficulty in hunting large mammals, bush meat lovers have not switched to hunting small African giant pouched rats as they are not traditionally eaten by most people in the surrounding villages of Ngel Nyaki forest.

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

The local community was involved in two different aspects of the project; these aspects are the capture-recapture experiment and the questionnaire administration. Five field assistants worked full time with me and were paid monthly. In the questionnaire survey, six locals were involved for a period of one week during after which they were paid. Apart from the monetary benefits, the locals have admitted that they have learnt so much from the project that they are now self-motivated to conserve Ngel Nyaki forest.

5. Are there any plans to continue this work?

There is a plan to continue this project because the African-brush tailed porcupines (*Atherurus africanus*) have been observed to observe to disperse seeds Gabon. Since the porcupines co-exist together with the African giant pouched rats in Ngel Nyaki forest, it will be interesting to investigate the relative importance of these brush-tailed porcupines in seed dispersal. I have been talking to a potential MSc student along those lines. Furthermore, I intend to source for grants to continue the seed removal experiments for a few more years because there seem to some inter-annual variation in the foraging behaviour of the rats.

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

I intend to share the results of my work in the form of journal publications and short articles in newspapers for the general public. In addition, I have already presented part of the work in the 2016 Association for Tropical Biology and Conservation (ATBC) conference in Montpellier, France. I have also presented a seminar on the project at the A.P. Leventis Ornithological Research Institute (APLORI), Nigeria (August 2016). I hope to further present my work in conferences and possibly radio or TV programmes.

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 RSG fund was used in a period of 1 year (January 2016 to December 2016), although the reports, findings, and communications have not yet been completed, the fund has been adequately used and exhausted. Most of the fund were used in the first quarter of 2016 as the equipment needed to be available. The timeframe in which the fund was used fitted well with the anticipated length of the field studies.

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
64 collapsible cage traps (modelled after Havahart traps) at £40	2,880	2,560	+320	After bargaining with the trap fabricators, a discount of £5 per trap was given us

each				
Cost of transporting manufactured traps from Jos to Ngel Nyaki forest	170	195	-25	Cost of fuel increased all over the country and it affected the cost of transportation
Monthly allowances of three field assistants at £70 per month for five months	1,050	1,250	-200	It became obvious that 2 more field assistants were needed (to make a total of 5 field assistants), therefore, their allowance was reduced to £50 each month for five months
Allowance for 4 youths to administer questionnaires £65 per each over the whole period	260	260		Worked out as planned
Toshiba Satellite pro c50 laptop for data storage and processing	320	300	+20	The laptop did not have many features so it was a bit cheap
Printing of posters and flyers	280	300	-20	300 copies of posters and 500 copies of flyers were printed. We had it cheap because all of the items were printed at the same place
Printed T-shirts and face caps	0	120	+120	We printed 20 T-shirts and face caps in order to look organized during the awareness program and questionnaire administration
Raincoats and gumboots	0	100	-100	6 Raincoats and 6 pairs of gumboots were purchased for field work in the rainy season
TOTAL	**4,960**	**5,085**	**-125**	1GBP=345NGN during the execution of the project The extra £125 was provided by the Nigerian Montane Forest project

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

First of all, there is need to finish the data analyses, write up our findings in scientific articles as well as publish in non-science media platforms. At the moment, I am preparing a scientific paper on seed removal by African giant pouched rats (*Cricetomys* sp.) which would hopefully be submitted by March 2017, I hope to

submit another one the density and habitat choice of African giant pouched rats by September this year. I intend to present a talk on the effect of predation risk on habitat utilisation of African giant pouched rats at the 54th ATBC conference in Merida, Mexico.

There is a plan to collaborate with some staff of Taraba State University, Nigeria in order to expand the project to nearby Gashaka Gumti National Park so as to compare the behaviour of the rats in highland and lowland forests of Taraba State, Nigeria. An application will hopefully be sent to Chester Zoo by the beginning of 2018 to fund this project idea.

I have already started talking to prospective masters students in Nigeria the possibility of studying the co-existence of African giant pouched rats and African brush-tailed porcupines in terms of niche partitioning and effect of food abundance in determining their relative contributions to seed dispersal and predation.

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

In the talks presented in Montpellier, France and Jos-east, Nigeria, The RSGF logo was shown in the appreciation (final) slides of the PowerPoint presentations. On the posters, flyers and questionnaire sheets printed, the RSGF logo appeared on either the top or bottom right of the material. In addition, the RSGF logo was boldly printed on the t-shirts and face caps used in our awareness creation programmes.

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

12. Any other comments?

I am indebted to Rufford small grants for funding this project. I am really grateful and feel fulfilled that I was able to carry out this project at the right time just as I earlier on envisaged. Finally, I hope to apply for more grants in future.