

## The Rufford Foundation

### Final Report

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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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

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Grant Recipient Details	
Your name	Samuel Kojo Annan-Riverson
Project title	An assessment of the status and seasonal distribution of forest elephants ( <i>Loxondata cyclotis</i> ) in Kakum Conservation Area, Ghana.
RSG reference	21797-1
Reporting period	May 2017 to April 2018
Amount of grant	4,978.00
Your email address	annanriverson@gmail.com
Date of this report	10 <sup>th</sup> May, 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
To determine the population status of forest elephants in KCA.				In June, 2017, a line transect survey was carried out in Kakum Conservation Area (KCA) to determine the population status of forest elephants. A total of 55 transects were systematically distributed in 1.84 x 1.84 km grids. Distribution maps of elephants in KCA's MIST database were used as the basis for the uniform systematic distribution of the transects. A total of 178 dung piles were recorded. Using DISTANCE 5.0 software, the average dung pile density calculated for KCA was 609.096. Based on the retrospective dung decay model, the KCA elephant population as estimated to be 184+/-27.31 (CV=14.84%). this estimate shows an increase in the KCA elephant from an estimate of 164 +/-37 (CV=10.51) in 2004.
To determine the factors that determine the seasonal distribution of elephants in KCA				Line transect surveys were conducted in June 2017 and February 2018 to determine the factors that determine the seasonal distribution of forest elephants in KCA. June and February respectively marked the peak rainy and dry seasons. In both seasons, the relationship between and elephant dung and human and ecological variables such as illegal activities, water sources, fruiting trees, elevation, canopy gap, less dense vegetation, very dense vegetation, raffia stands, and distance to nearest park boundary and patrol camp were tested. Only 'very dense vegetation' variable which was significantly correlated to dung distribution

			<p>(<math>r=0.279</math> and <math>P&lt;0.05</math>). Dung piles were observed more in areas which were heavily logged in the past and as such had very dense vegetation with a more diversity of plants to forage on. Even though 'distance to nearest park boundary' and 'illegal activities' were independently not significantly correlated to dung piles, they were both inversely related to dung pile distribution. The mean index of illegal activities was 0.363. With 40% of the illegal activities recorded being empty cartridges may explain why illegal acts were inversely related to dung piles. The current index (0.363 illegal acts per km) is about 42.86% lower than that which was recorded during the 2004 CITES MIKE elephant survey in KCA.</p> <p>Dung piles was also inversely related to 'distance from nearest park boundary' though not significant. KCA is surrounded by a mosaic of farms with at least 75% of farmers sharing their farm boundaries with the park. Elephants therefore hover close to the park boundary for easy access to the farms.</p> <p>KCA is well drained with about seven major streams and does not experience high drought during the dry season. Water source was therefore not an influencing factor of elephant distribution as much as the two aforementioned variables were.</p>
<p>Awareness creation about elephant conservation and crop raiding mitigation.</p>			<p>Conservation education and awareness creation were held in 10 basic schools and 10 communities around the park. Communities were selected based on areas with reported cases of high elephant crop raiding incidences. Some community members were trained as wildlife volunteers to help willing farmers to construct pepper/chilli fences around their farms. Farmers were encouraged to grow pepper close to areas sharing</p>

				boundaries with the park to deter elephants and also to be used as inputs for their pepper fences.
Development of elephant conservation action plan.				Multi stakeholder consultative workshops were held to discuss ways elephants can be effectively conserved in KCA whiles reducing human wildlife conflicts. The stakeholders comprised selected community leaders and members, farmer groups, representatives from KCA, Ministry of Food and Agriculture, District Office of Ghana Education Service District Assembly, Judicial Service and Police Service. Findings from the field survey were shared at the workshop. Based on these findings and other information stakeholders shared a first draft of an elephant conservation action plan has been circulated to stakeholders for review and finalization.

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

Even though the project was successfully implemented, we had some challenges particularly with affected farmers whose farms had been raided by elephants. Some farmers did not see the efficacy of the mitigation methods (pepper fences) because they did not complete the construction of the fences around their farms and as such their farms were again raided. Their reasons were mostly because they could not afford to constantly recharge/reapply the pepper and grease in the rags every 6 weeks. The testimonies of farmers who had have perfectly constructed the fences around their farms and periodically recharged the rags and had been successful helped to debunk the assertions of some of the farmers who complained that the method was ineffective.

Secondly, rising cost of fuel affected the budget and increase in the DSA of the field data collection personnel greatly affected the budget. The budget had to be adjusted to ensure a successful implementation of the project.

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

(A) The project has been able to produce an update on the current population status of elephants in the park. The density of vegetation in the park has also been known to influence the distribution of elephants in the park, a factor which was seen to be insignificant in previous studies. This information will be useful in updating the

park's management plan and planning law enforcement ground coverage patrols in the park.

(B) The collaboration between the park authorities and fringe communities particularly those affected with high elephant crop raiding incidences have been consolidated. Through the conservation education programmes in the school and communities, people pledged their support in helping to conserve elephants and give intelligent information about poachers who may be using their communities as transit routes. Wildlife volunteers were also trained in the construction of pepper fences in areas farther from the posts of the park staff.

(C) For the first time, an action plan for the conservation of KCA elephants has been developed. This when finalised will serve as the blue print for elephant conservation, research and community livelihood empowerment.

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

Traditional authorities and opinion leaders were consulted in all community engagements to solicit their support for the project. They were also present during these engagements and stakeholder workshops and appointed the volunteers who were trained.

**5. Are there any plans to continue this work?**

Yes, there is the need to continue this work.

- A. With a knowledge of the influencing factors of elephant distribution in the park, there is also the need to understand the nature of the crop raiding situation outside the park using plots on demonstration farms.
- B. Farmers need to be introduced to more recent crop raiding mitigation methods such as using colonised bee hives to construct fences around farms. These hives will produce honey to generate additional income to famers while deterring elephants from raiding their farms. This forms part of the livelihood empowerment component of the action plan.
- C. Conservation education and public awareness creation need to be intensified.

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

Copies of the report of this project will be shared with the Ghana Wildlife Division.

Also findings from the elephant survey will be published in a peer reviewed journal. I have been contacted by Lambert Academic Publishing who have requested to publish this paper.

The African Elephants Specialist Group will also be given copies of this publication.

**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 grant was used over 1 year period as anticipated. Little delays have been experienced with the return of the drafts of the action plan from the stakeholders.

**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
Equipment Cost	720	720	0	
Field Cost	2832	3136	-304	The difference was due to the risen cost of fuel (at £3.6 per gallon) and DSA for field staff which was increased to £5.00 because of the difficult terrain for the data collection.
Conservation Education	935	530	405	The difference was due to budget adjustments which catered for increase fuel cost. Posters and T-shirts were left out because of the adjustments.
Multi-Stakeholder's workshop	491	590	-99	Difference due to risen cost of fuel and increase in participants more than budgeted for.
<b>TOTAL</b>	<b>4978</b>	<b>4976</b>	<b>2</b>	

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

- A. With a knowledge of the influencing factors of elephant distribution in the park, there is also the need to understand the nature of the crop raiding situation outside the park using plots on demonstration farms.
- B. Farmers need to be introduced to more recent crop raiding mitigation methods such as using colonised beehives to construct fences around farms. These hives will produce honey to generate additional income to famers whiles deterring elephants from raiding their farms. This forms part of the livelihood empowerment component of the action plan.
- C. Conservation education and public awareness creation need to be intensified.

**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?**

Rufford was acknowledged in all presentations made during the implementation of the project. The logo of Rufford was also part of the PowerPoint presentations made.

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

**Ernestina Anie** is the Collaborative Resource Unit Officer at KCA with over 10 years of experience in facilitating conservation education activities and training farmers on elephant crop raiding mitigation techniques. Her inclusion was valuable in working with stakeholders at the conservation education programmes and formation and training of the Community Wildlife Volunteers Groups.

**John Nyame, Richard Otwey, Paullus Awuakye, Mohammed Adam and Michael Oppong** are staff from the Law Enforcement Unit of KCA. They have about 28 years of field patrol experience working in KCA. They led some of the survey teams. They were very useful in collecting the field data due to their past experience with the Elephant Biology Monitoring team at KCA from 2000 to 2004 as field assistants using the same data collection protocol described in this project.

This project was advised by **Prof. Emmanuel Danquah**, a Technical Advisory Group member of the IUCN/SCC African Elephant Specialist Group (AfESG) and a senior lecturer at the Department of Wildlife and Range Management. Prof. Danquah was part of the Elephant Biology Monitoring team at Kakum (2000 – 2004) and has done some work on the Kakum elephants.

I (**Samuel Kojo Annan-Riverson**) led the team to have this project completed. I am currently working with the Ghana Wildlife Division (Forestry Commission) at Kakum Conservation Area as the Wildlife Officer in charge of Law Enforcement Unit. I designed the project and supervised its implementation; in the field, communities and workshops. My knowledge in the use of QGIS and DISTANCE software packages helped in the analysis of data and production of distribution maps and other GIS aspects of this project.

**12. Any other comments?**

We as a team are very grateful to the Rufford Foundation for their major role in funding this project. We are also thankful to Mr. David Kpelle (Operations Director of the Ghana Wildlife Division), Prof Emmanuel Danquah (KNUST, AfESG), Dr. Moses Sam (Ghana Wildlife Division), Martha Bechem (IUCN MIKE Secretariat) and Stacey Baggerley for their diverse support in making this project successful. Finally, we appreciate the collaborative support of all stakeholders, particularly affected farmers of elephant crop raids whose tolerance have ensured the survival of KCA elephants.