

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	Agro Prince Pascal
Project title	Status, Distribution, and Abundance of Vulnerable African White Bellied Pangolin (<i>Phataginus tricuspis</i>) in Human Dominated Forest Landscapes around the Asukese Forest
RSG reference	26493-1
Reporting period	Final Report
Amount of grant	£5000
Your email address	agropascal1981@gmail.com
Date of this report	17 th December, 2019

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

Objectives	Not achieved	Partially achieved	Fully achieved	Comments
Document and obtain a current baseline data on pangolin populations				<p>The study has shown that both white-bellied and black-bellied pangolins occur in the Asukese Forest Reserve. We conducted inventory across four forest reserve compartments equivalent to 512 ha (or 5.12 km²) and recorded 10 pangolins including eight white-bellied pangolins and two black-bellied pangolins.</p> <p>Using the mathematical method of proportional representation, we estimate that there are about 518 pangolins currently existing in the Asukese FR with total land area of 26,539 ha (equivalent to 265.39 km²) that need our protection.</p> <p>Our non-random, trail-bound transects yielded no encounters nor sightings of pangolin signs (e.g. borrows, droppings, etc.) hence we adopted a random guided search approach (covering both day and night) in combination with a passive trapping technique i.e. setting of passive traps (traditionally crafted) to capture pangolins alive. Here we relied in the traditional ecological knowledge (TEK) of the local guides to generate our data.</p> <p>The failure of recording any data on pangolins using the transect approach could be due to the restricted nature of walking transects during search which does not permit searching beyond a certain range or width.</p> <p>Our opportunistic camera trap surveys also did not record any pangolin activities over the 1-month</p>

			<p>period (September – October 2019) i.e. 90 trap nights. In all, three camera traps were set and monitored for over the 1-month period. The three camera traps were set at 300 to 500 m apart across the surveyed area and monitored over a 1-month period (i.e. 30 days) hence the 90 trap nights.</p>
<p>Initiate conservation awareness and education on the local conservation of pangolins in Ghana</p>			<p>800 school kids (aged between 6 years to 16 years) from both public and private schools have been sensitised on the importance of pangolin (wildlife) conservation. Our school kids' education activities included;</p> <ul style="list-style-type: none"> • Holding of the species by kids. • Using arts to create awareness and address fear of the species. • Messages aimed at changing kids' perceptions about pangolins as edible species (via project banner). • Presentation of videos/films to show kids the plight and dangers faced by pangolins from humans. • Presentation of awards (t-shirts) to best artists of the pangolin drawing exercise etc. <p>500 people including farmers, hunters, local bushmeat traders, and NTFP collectors in eight fringe communities have been sensitised during our community education and awareness programmes. The eight communities were chosen based on their nearness and dependency on the Asukese forest. The categories of persons selected was also based on their reliance on resources from the Asukese Forest Reserve for their daily livelihoods. Our conservation education messages focused on the threats to</p>

			<p>pangolins identified during our pangolin assessment inventories (e.g. use of chemical use on farms and its effects), the need to protect pangolins and the associated future benefits to the communities (e.g. ecotourism, future generation to see). We also through our community interactions tried to identify and educate community members especially hunters on alternative life forms (e.g. engagement of grasscutter farming, bee keeping etc.) to keep them from hunting pangolins.</p> <p>Three school-based wildlife conservation clubs (WCCs) have been initiated in three community schools out of the eight selected in the area. We were able to initiate the WCCs in only three schools because the current project had limited funds, time and resources to support additional schools.</p> <p>We have also constituted one hunter's association (in Asamang Community) made up of 15 professional hunters who have been trained and educated to help identify more areas of pangolins, collect data and help monitor human activities in the identified areas to support future scientific research.</p> <p>We have initiated discussions with the Forest Services Division (FSD), Wildlife Division and the timber contractors holding concession rights of the reserve to help curb harvesting of pangolins from the Asukese Forest area through strict enforcement of the wildlife laws.</p> <p>Following our community sensitisation and awareness programmes across the eight communities, some other communities have approached us to extend our pangolin conservation</p>
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			<p>project to their communities for them to participate and contribute the conservation of pangolins.</p>
<p>A halt to degradation of natural habitats within the landscape to conserve the species and promote sustainable populations for posterity.</p>			<p>Four compartments totalling 512 ha (5.12 km²) of the Asukese Forest Reserve where our field inventory was carried out remained intact and served as a safe habitat for pangolin species. During the first 6 months of our field inventory, we surveyed, identified and collected 400 empty cartridges (from shotguns) and the GPS coordinates of each cartridge was recorded. In the 9th month of the project, we conducted another rapid search survey and only 50 empty cartridges were identified and recorded tracking back to our earlier routes.</p> <p>This was an initial evidence of the impact of our education and awareness programme on pangolin conservation in the communities. Discussions are far advanced at the district level involving all relevant stakeholders (local authorities, Forest Services Division, Wildlife Division, Civil Society, UENR, Ghana Police Service, concessionaires and relevant local government institutions) to reinforce regulations outlawing poaching of pangolins from the Asukese Forest Reserve.</p> <p>Establishment of community-based tree nurseries have been initiated in three communities to encourage planting of more trees on degraded farmlands outside the reserve to create more suitable habitats for pangolins outside the formal forest reserve area.</p> <p>Community members have been educated and encouraged to reduce chemicals (e.g. weedkillers and pesticides) use on their farms and adopt organic farming practices to enhance environmental conditions that could</p>

				support pangolin populations.
The emergence of innovative forms of collaborative forest management practices within the context of traditional communal species conservation regime.				<p>Contacts have been made and discussions are on ongoing with three selected fringe communities (Asamang, Kramokrom and Yawbrefo) to initiate protective and adaptive measures such as establishment of collaborative community-based resource management areas and community protected area management units that could be embraced by local inhabitants to sustain the conservation of pangolins in their area.</p> <p>We are also discussing with the Forestry Commission, Wildlife Division, concession holders and local authorities to consider the delineation of areas where pangolins were identified as pangolin hotspots within and outside of the Asukese Forest Reserve which will be guided by strict conservation laws.</p> <p>Such areas, when established, will serve as local wildlife conservation corridors to enhance pangolin (wildlife) conservation efforts.</p>
Commencement of a reporting/sanctioning system for community members to voluntarily return captured live species of pangolins to the management of the forest reserve for reintroduction.				<p>This objective could not be achieved during the current project. Therefore, we hope to achieve this long-term objective through our future projects where local leaders will be encouraged to formalise and enforce effective local sanctions (e.g. using taboos) on the hunting of pangolins in their communities.</p> <p>In line with this future objective, the project team through the Department of Ecotourism, Recreation and Hospitality held discussions with management of the University and we are currently seeking funds to refurbish a 3.5 ha forest area as a wildlife/pangolin sanctuary on the university campus.</p>

			<p>The sanctuary will serve as educational grounds for kids as well as adults in the city and double as a safe ground for pangolins which we shall rescue from hunters.</p> <p>In our future project, we also plan to resource and support members of the hunter's association and train them in alternative livelihoods (e.g. grasscutter farming, beekeeping, mushroom production and snail farming) which could support their livelihoods and reduce their involvement in hunting.</p>
<p>Confirmation of integrating civic science (knowledge) with modern scientific approaches to secure a stable supply of diverse ecosystem services in the area.</p>			<p>Over the project period, local community members who participated in our surveys showed much commitment and gave out relevant information on pangolins and where they are found in the area. For instance, during our field inventory and monitoring activities, the local guides (professional hunters) were very vital to our data collection on the distribution in the area.</p> <p>Currently, 16 community members (two professional hunters per community) in each of the eight communities where community surveys were conducted have been selected, trained, and challenged to voluntarily produce data on the number of pangolins harvested by individuals from their communities.</p> <p>This is a strategy to challenge ordinary people without a formal training and background in wildlife conservation to produce data of high quality and contribute to scientific research.</p>

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

Initially we planned on conducting our field surveys by walking 1 km transects distributed over a large proportion of the Asukese Forest Reserve (four compartments of 128 ha each). However, recce within the 1st week of the field inventory activities

yielded no results. To deal with this challenge, discussions were held with the local guides (hunters) who were recruited to participate in the research to seek their input in terms of civic knowledge sharing. In the end, we agreed and adopted a more conventional/orthodox approach which involved randomly searching within the forest area to find pangolins and associated activities. This informal and non-predictable search approach proved positive and yielded results as the local guides through their professional hunting experiences could easily identify locations within the forest where the pangolins could be found. This approach was more effective because it was more convenient and unrestrictive in terms of areas that could be searched unlike walking trail bound transects. It also allowed the team to search more areas without being restricted to a particular route. Overall, the team covered an average of 10 km per day searching and recording pangolin signs for the entire duration of the field surveys.

Again, due to the limited time available for the project to be completed, we were not able to cover much of the forest reserve area as planned. However, we were able to cover about 5.12 km² out of the total of 265.39 km² and will require more funding support to cover the whole reserve in our future projects.

We also anticipated hiring of about 10 camera traps for our opportunistic trap surveys, but we could only hire three camera traps to be used over a limited time period as the owners could only hire them out for a 30-day period. The three cameras hired was due to budget limitation as hiring cost was higher than anticipated and for the duration, very few institutions were ready to hire out their traps over a longer duration due to previous bad experiences of traps being destroyed or stolen by locals. However, we intend to acquire camera traps (20) in our future project to enable us to cover much area and also collect data over a longer period.

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

1. Overall, about, 1300 people including 800 school kids (aged between 6 year to 16 years) from primary and junior high schools and 500 adults (community members) have been sensitised and encouraged to engage in sound environmental and wildlife conservation practices. Following our community education and sensitisation programmes, there has been changes in behaviour of the communities and schools in terms of their relationship with pangolins over the project period. This is as a result of the formation of school-based wildlife clubs, and hunter's associations. Through this project, we have been able to apply the concept of Wildlife Value Orientation (WVO) to assess inhabitant's perceptions on wildlife conservation in the study area which is novel to conservation efforts in Ghana compared to Europe and America.

2. Three wildlife conservation clubs (WCCs) have been initiated in three local community schools (Asamang, Yawbrefo and Kramokrom). The members will serve as pangolin conservation ambassadors/leaders in their various communities fringing the Asukese Forest Reserve. Remarkably, heads of other local schools not yet captured have come up to the project team to plead for the initiation of similar WCC in their schools by way of promoting wildlife conservation at the local level.

3. Our efforts to strengthen community or traditional sanctions on pangolin hunting resulted in fewer reported cases of killings and trading in pangolin meat and parts within our eight focal communities. Reports from our local informants across the eight communities, indicated fewer incidences involving the killing of pangolins over the 9-month period of our project. This was also evident from our field observation where the number of empty cartridges recorded in the forest area was 400 in the first 6 months compared to 50 empty cartridges in the last month of our project. This is an evidence of hunter's compliance in the area after our community education and sensitisation programmes.

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

Local communities were involved in all aspects of the project right from the onset. Rapport was established with all the focal communities prior to the start of all activities and where necessary, homage was paid to traditional authorities. In our community surveys, we targeted both males and females to obtain data on the current status and uses of pangolins parts in their area.

The local communities have benefited in diverse ways and could be classified into two, knowledge acquisition and material gain. Materially, we supplied Rufford branded t-shirts to some of the project participants, local leaders, teachers, heads of stakeholder institutions and wildlife club members. This identifies them and signifies their commitment as agents of change through our community campaigns.

A hunter's association (15 members) has been initiated and members were recruited, educated and oriented on the need to conserve wildlife species such as pangolins and encouraged to stop their harvest and rather hunt species like grasscutter which were in more abundance. The understanding of these hunters on the value of wildlife conservation has been modified and they have promised to taking up the task to educate other hunters on the need to stop killing vulnerable and threatened species like pangolin and turn to species of less conservation concern in their area.

Additionally, four professional hunters were recruited to provide traditional ecological knowledge (TEK) services e.g. tracking, trapping site identification, and elucidating historical ecological trends in the Asukese Forest. In addition, these selected hunters were trained and subsequently employed as field assistants - laymen lacking a formal conservation background yet trained to perform specific scientific tasks - to carry out the interviews and camera trapping surveys.

As part of our local community engagements and interactions with local community leaders, assurances have been given by some local chiefs to initiate actions (local sanctions) that will prevent individuals from hunting threatened species in their communities. Through this project, some local communities have also taking up the task to sensitise and educate their members via their local radio stations (information centres) on potential future benefits of conserving vulnerable and threatened wildlife species in the area.

5. Are there any plans to continue this work?

Yes, plans are far advanced to continue this project. This is because the Asukese Forest covers an area of 265.39 km² but our current project only covered part of the east block measuring 5.12 km². The project team estimates that there are about 518 pangolins existing within the Asukese Forest Reserve and therefore the other areas need conservation attention. Additionally, other communities whose inhabitants depend on resources from the Asukese Forest Reserve for their livelihood were not part of this project and have been targeted to be part of our future conservation and community sensitisation programmes.

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

We plan to share the findings from this project through publications in a high impact international peer-reviewed journal to make the data available to a broader community of scholars in academia and organisations with interest in conserving pangolin populations. Manuscripts will be prepared from the two BSc research/thesis that resulted from this project.

The student thesis shall be presented at colloquiums and poster presentation sessions at organised conferences at the university. We also hope to publish our findings from the student thesis in local and national newspaper column to create greater awareness on the plight of pangolins in Ghana.

Printed copies of all research publications will be presented to the major stakeholder groups Forestry Commission, Wildlife Division, the university authorities, district education office and the district assembly to motivate stronger enforcement of conservation law and to generate support for pangolin conservation research in the future. At the community level, a town hall meeting will be scheduled to present the outcome and discuss the tipping points with the local communities and traditional leaders.

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 Rufford Foundation grant was used over a 12-month period as compared the anticipated 18 months. However, the project team believes that more field inventories are needed. Therefore, the project team will continue to monitor the Asukese Forest Reserve and the project communities while additional funds will be sourced to continue to carry out our conservation activities which will include wide range rapid assessment surveys to record data on pangolins, and formation and inauguration of school-based wildlife conservation clubs (WCC) to upscale conservation of pangolin in local communities fringing the area.

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
Digital/video camera (Samsung H200 Full HD Camcorder)	130	130		Due to the delay in release of funds purchasing via online was not possible so we used the budgeted amount to hire a digital camera used for the project pictures.
Purchase of Garmin Map64s GPS for data collection + pair of rechargeable lithium batteries	145	245	+100	We proposed to purchase a Gamin eTrex 20 but due to poor reception within the forest environments, we opted for a higher version Gamin Map64s hence the extra amount spent.
30 mins weekly airtime at local radio station for 8 weeks	160	160		
Printing of project T-shirts and Construction of conservation billboards	460	360	-100	We proposed to construct 4 signboards at £160 but we used part £100 to support the purchase of the GPS and the remaining £60 to support the printing of 20 more T-shirts making 120 T-shirts in total instead of 100 T-shirts proposed
DSA for 5 team members during Conservation education outreach programs	250	250		
Refreshment for participants at conservation education seminars/workshops	200	200		
Hiring projector + fuelling power generator for project briefing, community education, presentations and video shows	100	100		

Fuelling cost of vehicle for conservation education at local communities	200	400	+200	The Department of Ecotourism, Recreation and Hospitality at the University supported the project team with fuelling amounting to £200 to carry out the program due to changes in fuel pricing
Cost of hiring vehicle for conservation education (school outreaches)	200	200		
Expense on design and printing of photo leaflets/guide, questionnaires, & stickers	100	100		
DSA for 5 project team members for field data collection	300	300		
Hiring of labour (4 local guides) to support field inventories (transect construction)	80	150	+70	During our reconnaissance survey we changed our initial idea of constructing transects and adopted random (non-probability sampling or convenience sampling technique) search approach hence the £70 extra cost in labour
Hiring of 3 Camera traps for data collection + service cost	120	120		We budgeted for 4 camera traps, but the amount could only cater for hiring of 3 camera traps
Fuelling of vehicle for field inventory	1200	1400	+200	The Department of Ecotourism, Recreation and Hospitality at the University supported the project team with £200 worth of fuel to carry out the field inventories. The extra amount spent was due to fuel price changes at the pumps over the project period.
Hiring 4x4 vehicle for data field inventory	900	900		
DSA for participatory training of 4 community members (pangolin specialists) + 1 forestry official + 5 project team members	150	150		

Community entry + rapport with local leadership	40	40		
Hiring and fuelling of 4x4 pick up for community entry	160	250	+90	We raised and spent £90 more on fuelling due to price changes at the pumps during the project period.
Pre-project briefing + preparation of field survey protocols and Refreshment and lunch for 5 team members for 3days	105	105		
Total	5000	5560	+560	<i>* Exchange rate used was £1 equivalent to Gh ₵6.30 Ghana cedis</i> <i>** The anticipated billboards could not be constructed due to high land rent charges by the landowners</i>

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

Ultimately, we aim to secure more funding support in the future to enable us to conduct more field inventory programmes to cover the entire Asukese Forest to ascertain the true status of pangolin population in the area.

We plan to extend our field inventory and monitoring programmes in the next project phase to cover wider areas of the Asukese Forest Reserve. We will achieve this through the commencement of rapid field assessment surveys covering the main forest blocks (i.e. production, cultural sites, hill sanctuaries and convalescence areas). We will use both passive and active methods including visual searches (day and night) and camera trapping approaches to obtain more detailed data on pangolins and their locations across the Asukese Forest Reserve.

We also plan to continue our conservation education and awareness raising programmes to reach more wide communities in the future. Ultimately, we aim to scale up our education activities to promote pro-conservation behaviour among fringe communities to safeguard threatened, endangered and vulnerable populations of two pangolin species (*Phataginus tricuspis* and *Phataginus tetradactyla*) in Asukese Forest Reserve and Ghana as a whole. We aim to achieve the following in our future project;

1. To involve local communities, Wildlife Division, Forest Service Division and District Assemblies in the development of a roadmap for conserving pangolins and other wildlife species in the forest.
2. To provide an opportunity for pupils, teachers and local community members to learn more about the forest environment, its importance and what people can do to help protect it.

3. To educate, raise awareness, increase public interest and understanding of the environment with the aim of promoting conservation of threatened pangolin species.

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?

Yes. The Rufford Foundation logo was used on all our printed educational materials including t-shirts and banner.

Yes, Rufford Foundation was acknowledged in all our public presentations, and social media communications on the project activities. At the student presentations (please you can find pictures attached) Rufford Foundation was duly acknowledged by the two BSc students for providing funds to support their research project. Rufford Foundation was also updated through two reports on the progress of our work.

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

Agro Prince Pascal: Agro was the principal investigator and contact person for all information on the project activities. Agro was involved in the mobilization of communities, building of rapport with local leaders, teachers, students, Forestry Services Division, Wildlife Division, the concessionaire and selected project participants. Agro organized all the field activities and carried out training, orientation and capacity building for two students, and four (5) field assistants (local guides) in field data collection - how to carry out field inventories, camera trap setting, monitoring and data recording. Agro assisted in the writing of update reports (two update reports) and the final report submitted to Rufford Foundation on the progress of the project. Agro is currently assisting (co-supervising) two BSc students to finalise their research thesis which was part of this project. Agro was responsible for the design and construction of the survey instrument (questionnaire) for the community data collection. Finally, Agro was involved in all the conservation education at both public and school levels, communication and community sensitization activities as well as discussions with the stakeholders and local leaders.

Oti Yeboah Augustine: Oti was responsible for organising and monitoring of project logistics. He was actively involved in the organization of sensitization programs. He supported the two BSc project students and build their capacity in conducting community surveys. He was responsible for monitoring of project budget allocations. Oti was our main facilitator during all school and community sensitization programs.

Francis Asamoah Boafo:

Francis was our media relations personnel responsible for photography, video recording and editing. Francis also played the role of GIS analyst and trained the two BSc students and field assistants on the use of GPS gadget to collect field data.

Elikem Mac Nutsuakor:

Elikem provided technical support and training on the use of camera traps. He trained and built the capacity of the two project students and 4 field assistants (local guides) to set up and monitor camera traps in the field.

Samuel Kweku Owusu:

Owusu was hired as the project team's driver. Samuel was originally not mentioned in our proposal because we had not hired his services as a driver by then and we were not sure who it would be.

12. Any other comments?

Over the period, we gained significant media coverage and our activities are being followed by several reputable individuals like Dr Dan Challender (Chair, IUCN SSC Pangolin Specialist Group), organisations including the Pangolin Crisis Fund, Pangolin Africa and other pangolin conservation interest groups which can be verified via our twitter and Facebook pages (www.twitter.com/pangolingh, www.facebook.com/pangolingh).

Additionally, we have established good working relations with a renowned educationist, writer and author of the book titled 'Red Alert' (Mrs Catharine Barr) to initiate a conservation education exchange programme which will benefit pupils from some selected local schools in Ghana and the UK. This future collaboration is aimed at helping to inculcate genuine passion for wildlife conservation among younger children in Ghana.

Prominently, two bachelor theses have been produced and funded from the current project being conducted by one female and one male student from the Department of Ecotourism, Recreation and Hospitality, UENR. The thesis titles are as follows;

1. Distribution, Abundance and status of two vulnerable Pangolin species (*Phataginus tricuspis* and *Phataginus tetradactyla*) in Asukese Forest Reserve (By Mr. Ishmael Out – BSc Final Year student UENR)
2. Wildlife Value Orientations of some selected communities close to Asukese Forest Reserve (By Miss Naomi Serwaa Nsiah - BSc Final Year student UENR)

The Rufford Foundation will be provided with a copy of the final thesis of the students upon completion.

The project team would be grateful if the Rufford Foundation will provide additional funding support for us to continue with our pangolin population inventories and environmental conservation projects in Ghana. We have built close working rapport with 10 additional communities during the first phase of our project and would like to continue the education programme to safeguard the vulnerable wildlife populations in the area.