

Final Evaluation Report

Your Details	
Full Name	Kapmegne Jacobine Sarielle
Project Title	Trade, Human and Environmental impacts on pangolins (endangered species) diversity in Dja Biosphere Reserve (DBR)
Application ID	26910-1
Grant Amount	£5000
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Date of this Report	15 th October 2019

1. 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
Educate and incite local people in fighting against pangolin poaching				-through the local chief of each village, populations were gathered. - following up, one seminar on education was hold in each village with the help of a local language translator, through which flyers containing community-based activities and incentives measures were explained in detail and distributed.
Assess the socioeconomic status and bush meat preferences of local people and propose medicinal alternative to pangolins' scale uses				-in each village, surveys were conducted by interviewing 20 households in each village. -after that, data were processed and then analysed. -we didn't propose medicinal alternatives to the use of pangolins scale because there was not any well-known traditional healer around Dja Biosphere Reserve, but we were said that most of pangolins' scale traditional healers are found in Asia.
Assess the extent of pangolin habitat degradation and pangolins poaching				Data were collected concerning pangolins' food availability, water swimming pools for the use of pangolins and human traces which may degrade pangolins' habitat; all these were done within three different habitats. In regard of pangolins' poaching we noticed certain signs such as a "living pangolin caught by a local inhabitant in ETU community, as we shown in the photo", we also encountered many hunters in the forest (during the habitat assessment) looking for living pangolins' burrows in order to set traps. During survey in each village a few questions were put to local people in regard of pangolins'

				<p>hunting, they answered us NO and they replied to local guide in local tongue: <<please don't tell them that we illegally hunt pangolins species>>, as our local guide told us after surveys and precise that he himself sees caught-pangolins species in each village in daily basis.</p>
Propose certain community-based activities for the sake of pangolin conservation				<p>-proposition of certain community-based activities written on the flyers when conducting education on fighting against pangolin poaching; after proposing them the income-productive activities, they told us that a lot of such kind of activities have already been proposed to them but that they are not willing to implement any of them because as they said: <<pangolins' hunting gives us the easiest food and income source, so we cannot shift from it>>. They also said the only way they can implement such activities is just in case they are provided enough support and relevant materials and finances, this is why we established a platform between the local people and DBR conservation authorities in order to help those who will show willingness for such activities.</p>

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

We encountered a stiff opposition in educating and inciting the Etu community in fighting against pangolin poaching; in fact, they resist to welcome us due to the reason they explain: "many projects on conservation have been carried out in DBR without taking into account our own people; they always promise us a bunch of things but at the end neither delivering us anything nor service". These challenges were tackled by our highly experienced guides who used the local language to explain them the importance of biodiversity conservation and how we are also there not to deprive them from their food supply but to improve their livelihood in conciliation with biodiversity conservation; in order to settle their mind, we also propose to provide them with locally produced wine (our guide told us that the local-produced wine is their favourite meal), as they were complaining of hunger.

In Somalomo community, various types of bushmeat (mostly pangolin) are sold in different meals and so constitute their staple diet. We encountered during survey

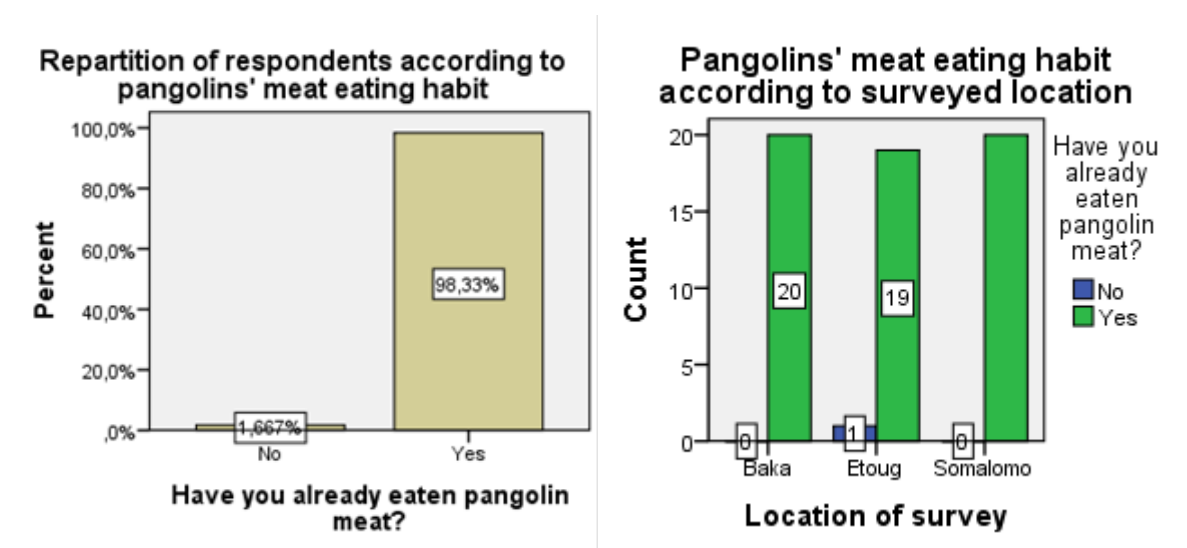
many interviewees resisting opening up about their bushmeat preferences; but using our trust building element (the first element) we were able to make at least 80% to open up.

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

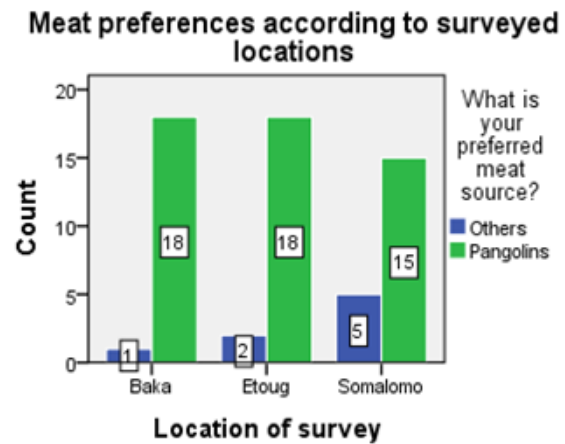
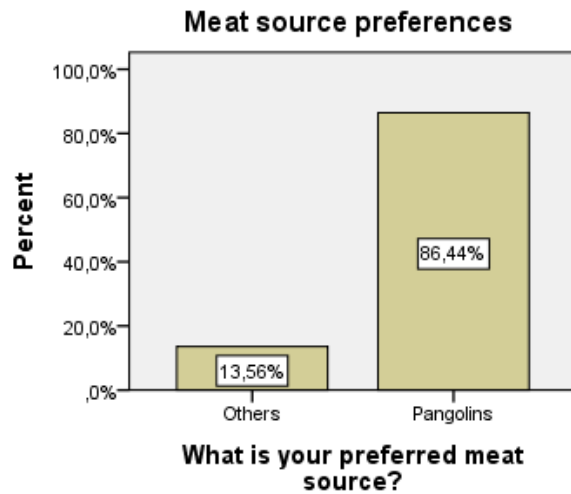
1) Surveys were conducted through interviews of 60 local households on both socio-economic status (education, income and household assets) and bushmeat preferences (focusing on pangolins' meat).

After analysis using SPSS V.20 software, we came out with the following results:

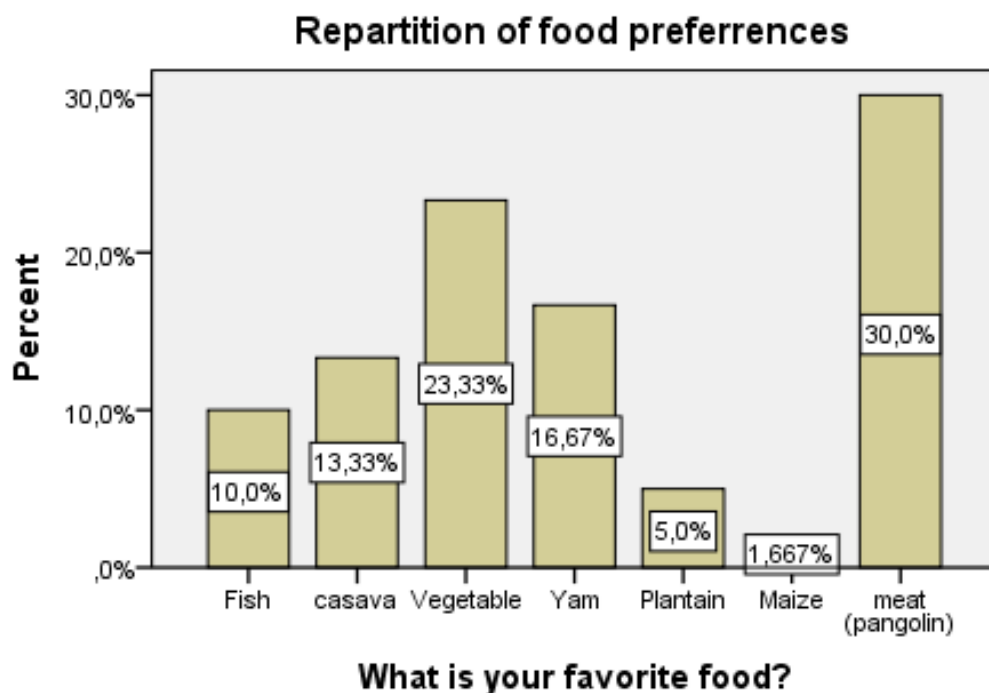
- Bushmeat preferences of local people (significant results)



These results show the trends in pangolins' meat-eating habit in three surveyed locations. We can see that 59 over 60 people have already eaten pangolins' meat which give the percentage of 98, 33%; the only person who hasn't yet eating pangolins' meat is a muslim. We can also see that the eating habit of pangolins' meat doesn't differ from surveyed location, which means that the overall surveyed population eat pangolins' meat. After conducting a chi-square test of independence, we found out that meat source preference doesn't vary across gender neither survey location ($p\text{-value}=0,59$; $0,66>0,1$) as they have already eaten pangolins' meat but vary across religion ($p\text{-value}=0,0<0,1$) as muslims usually don't eat meat.



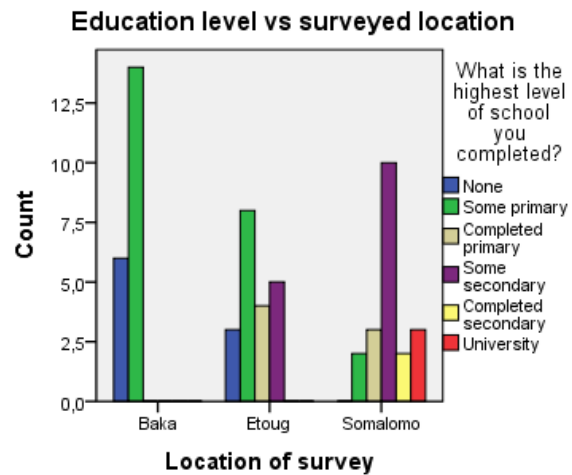
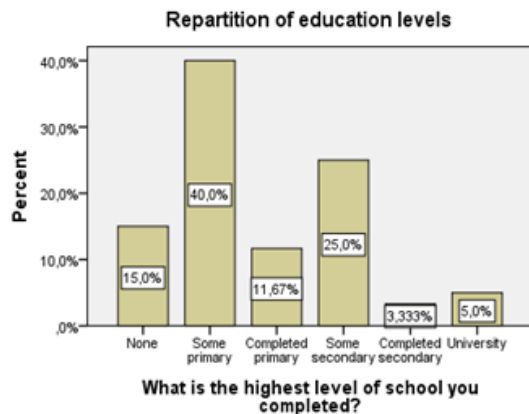
These results show us that the most preferred meat by surveyed people is pangolins' meat independently of village. After conducting a chi-square test of independence, we found out that meat source preference doesn't vary across gender neither survey location ($p\text{-value}=0,95$; $0,16 > 0,1$) as they must preferred pangolins' meat but vary across religion ($p\text{-value}=0,02 < 0,1$) as muslims usually don't eat meat.



We can see that the food most preferred by surveyed people is pangolins meat.

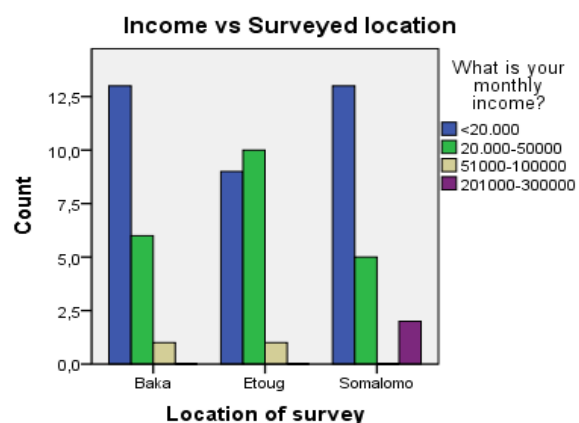
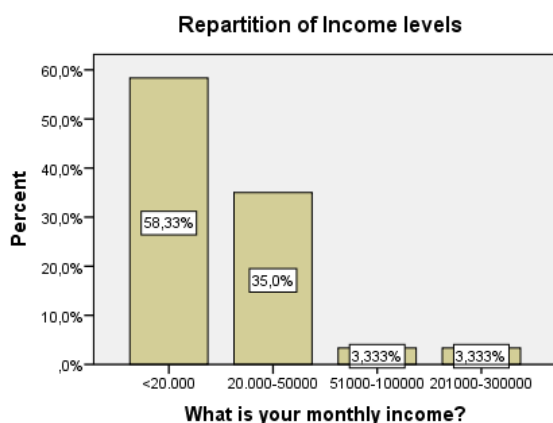
All the above results show that it is difficult to shift those people away from pangolins' meat.

- Socio-economic status
- ❖ Education level



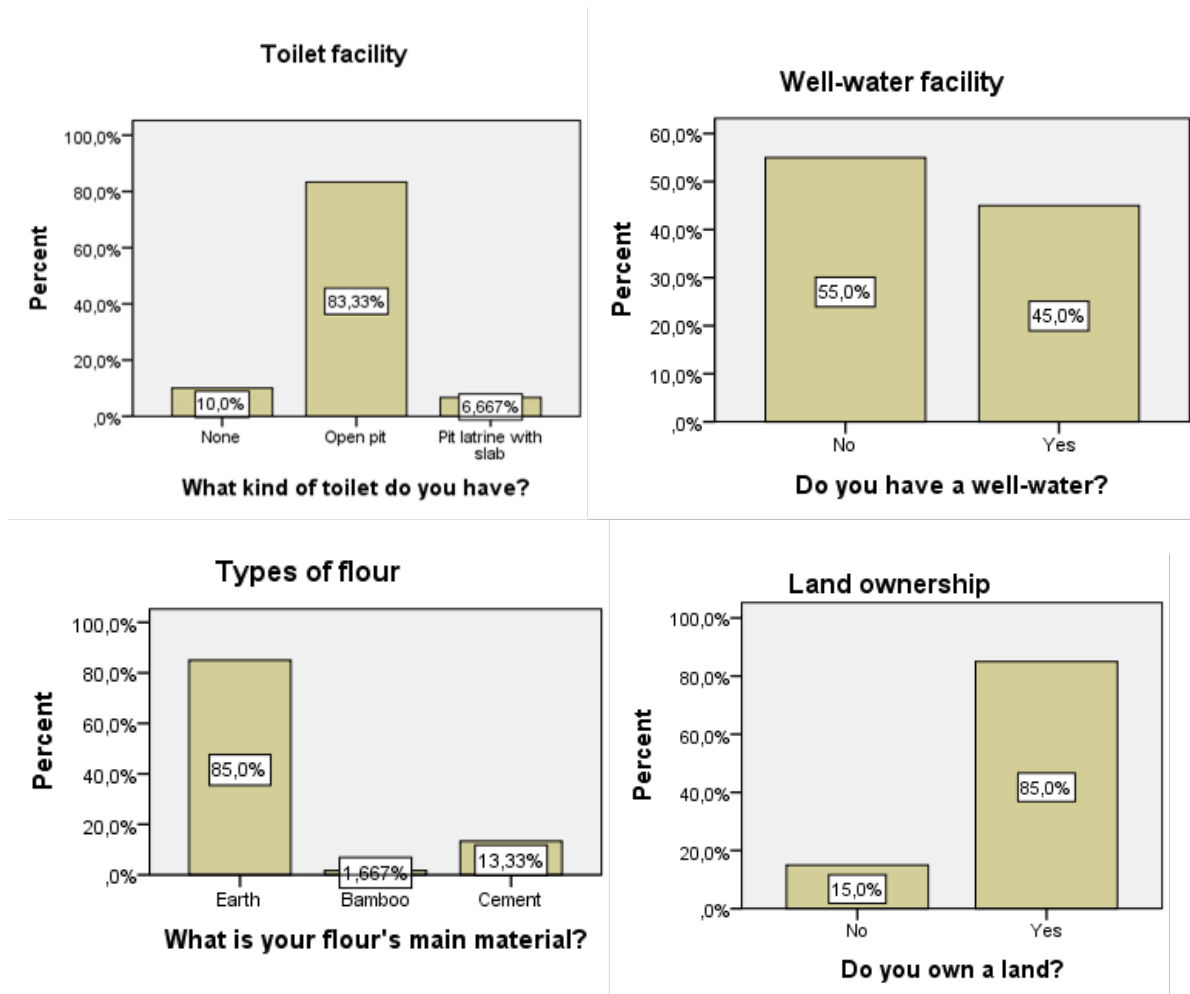
These results show that 40% of surveyed people have just completed some primary school level while 15% did not attend school; just a few people living in Somalomo completed their secondary school and reached university. This means that education level should be taken into consideration when addressing any learning-based conservation activity. After conducting a chi-square test of independence, we found out that education levels vary across survey location ($p\text{-value}=0,07 < 0,1$); people living in Somalomo have the highest education level.

- ❖ Income level



We can see that the most of interviewees live with less than 20.000 fcfa a month; this economic situation is spread all over the three surveyed villages. These results stress the need of income-productive activity for local people to shift their attention from illegal trade of pangolin species.

❖ Household assets



Concerning the household assets, many people do not have any or do not have the good ones; the only property highly acquired is the land, which means that local people can easily practice farming activities in case they were willing to (as they are not willing to).

2) In order to assess pangolins' habitat, three types of areas were selected: Primary forest, secondary forest and open canopy as long as these are the three most common areas found within Dja Biosphere Reserve. The criteria such as living and dead termite mounds, living and dead anthills, water points, human traces, pangolins' footprints and pangolins' burrows were considered.

Within each area, one plot of 50 x 50 m was set to make inventory of living and dead termite mounds, living and dead anthills, pangolins' footprints and pangolins' burrows and to observe the presence of water points and human traces. The following 10 x 4 cross-tabulation show the overall results of habitat conditions.

Title: comparison of Pangolins' habitat conditions

	Primary forest	Secondary forest	Open canopy
Number of Living termite mounds	7	32	17
Number of Dead termite mounds	1	19	8
Number of Living anthills	14	27	10
Number of Dead anthills	4	16	5
Number of Water points	1	0	0
Tree density	2	3	1
Number of Human traces	1	19	4
Number of Pangolins' footprints	10	19	2
Number of burrows	7	25	4

The major outcomes of the habitat assessment are the followings:

- Food availability and living signs.
 - ❖ For the three areas 84 termite mounds and 74 anthills were inventoried, showing no great difference between the numbers; this means that the favourable conditions influence at the same level the production of termite mounds and anthills. 51 termite mounds (60,7%) and 43 (58,1%) anthills were found within the secondary forest among which 32 living termite mounds and 25 anthills. This means that the secondary forest is the most suited habitat for pangolins in terms of food availability.
 - ❖ Besides this we notice that the pangolins' living signs (pangolins' footprints and burrows) were most present within the secondary forest (19 footprints and 25 burrows, making a total of 44 living signs representing 65, 67% of total number of living signs). This underlines the fact that pangolins mostly preferred secondary forest as living habitat.

➤ Environmental threats

Environmental threats to pangolins' habitat were assess using three criteria such as presence of water points for swimming pangolins, tree density and dead termite mounds and anthills.

- ❖ We noticed that the lack of water points constitutes a major environmental threat to pangolins' habitat since there was just a single water point within the three focus areas.
- ❖ For tree density, we found out that the highest tree density was found within the secondary forest.
- ❖ The high number of dead termite mounds and anthills means there are certain environmental factors responsible of death of termite mounds and anthills; these factors are to be studied and clarified.

➤ Human threats

As human threats, we noticed most of them within the secondary forest, such as footways created through human activities, certain agroforestry practices, resting places created by humans, many camping sites etc.



3) Successful education workshops and followed by distribution of flyers

By the help of a local language translator (also known as local guide), we conduct one education workshop in each village in which the following points were focused on:

- Information on diversity status of pangolin species (as endangered).
- Importance of biodiversity conservation with more focus on pangolins conservation.
- Emphasise on the government laws against illegal trade of pangolins' species.
- Propose certain community-based for income improvement of local people.

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

The flyers we distributed contain many alternatives measures for livelihood improvement (such as food trees participatory domestication, breeding, ...) while conserving pangolin species, which can be implemented by the local people through our help in case of need (a platform has been established between local people and conservation authorities in this regard in order to help those who will show willingness for such activities). The flyers were distributed after thorough explanation and questions-answering during education workshops in which they were eager to participate (except the case of Etu community which pushes us to use certain strategies to convinced them); certain local young people eager about socioeconomic study were trained during socioeconomic surveys through their participation.

The forest guide we used was chosen from Baka community; he learned on how to make inventories in regard of termite mounds and anthills. The ecogard and forest-guide also learn on how to set up transects:

- During socioeconomic surveys and education workshops by the help of a local guide, local people learned on the importance of biodiversity conservation.
- Local people also benefited financially through the transportation of our loads to different places and certain basic commissions.

5. Are there any plans to continue this work?

Yes, this work will continue through a Rufford second small grant application.

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

- Submit the report to Rufford Foundation.
- Give the report to Dja Biosphere Reserve conservationists.
- Give the report to my institution.
- Publish in a local and international biodiversity conservation journals.
- Give the report to certain local biodiversity conservation NGOs.

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

- Overall period: 8 months instead of 12 months as predicted
- ❖ Field work: 35 days instead of 111 days as predicted (from 5th February to 11th March 2019)
- ❖ From 12th March to 1st April 2019: we took a short rest after field work
- ❖ From 2nd April to 15th October 2019: we carried out the following activities: data verification; data edition, data analysis, literature review, writing of the final report, verification of the final report.

8. Budget: 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. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
-accommodation	832	1134	+302	As inclusive fees, we paid to DBR conservationists who provided us with accommodation during socio-economic studies and education and they also provided us with tents for forest camping.
-food	833	1195	+362	During Fieldwork (35 days), we were either buying raw food to cook or buying ready-cooked food. All through the project realisation we were noticing down any spending for food and the overall amount comes up as 1195
-administrative fees	300	667	+337	The fees were paid to DBR conservationists
-ration for eco-guards		854	+854	We used 02 eco-guards for habitat assessment paid at the same pay-rate
-transport	990	95	-895	The transport fees were used just for the travelling to the field and back

				(fieldwork and restitution). The trip between villages as well as to the forest were made on foot after many stopovers
Local languages translator (guide) :	200	213	+13	We used 01 guide for socioeconomics surveys and education
Research assistants	400	196	-204	We used 04 research assistants And we paid them by inclusive fees
-flyers	405	296	-109	Flyers were manufactured through an intermediate person who proposed us to facilitate the process and then took the flyers to one printers of his knowledge.
-materials	400		-400	We didn't implement any community-based activity, but we proposed them many and explained to them how to implement it, that is why we didn't buy materials for it.
-Expert in agroforestry	250		-250	As we didn't implement community-based activities (because we found it important to first proposed them and to come back to the field for the 2 nd Rufford Small Grant to assess the best one and help them improve their skills)
-expert in pharmaco-botany	250		-250	There was no need for expert in pharmaco-botany as long as we found out there was not any well-known traditional healer around Dja Biosphere Reserve, but we were said that most of pangolins' scale traditional healer are found in Asia.
Renting of field-work materials		350	+350	We rent 01 GPS, 01 digital camera, 02 compasses, 01 decametre for 35 days at inclusive fees rate.
TOTAL	4860	5000	+140	Local exchange rate used: £1 = 749, 51 FCFA

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

The important next steps are:

- 1- Study the factors responsible of the death of termite mounds and anthills within DBR.
- 2- Determine the pangolins' population and overall living dynamics within DBR through mapping and follow-up techniques in order to find out the optimal conditions for ecotourism in regard of pangolins conservation.
- 3- Design an effective ecotourism strategy (through the overall dynamics of living conditions and pangolins' population) in order to allow DBR forest-dwelling population to consciously and seriously take care of pangolins

species as they will provide them with financial incomes through ecotourism activities; this would simultaneously reduce the illegal trade of pangolins species and shift their attention towards another protein source (apart from pangolins' meat as there are many protein sources available in terms of fruits, vegetables and domestic animals).

All of these will be at the centre of the upcoming Rufford Grant.

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

The Rufford Foundation logo was used solely on the flyers and survey questionnaire.

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

Tcheutchoua Romuald Christial: research assistant and data analyst (helps designing data collection tools and data analysis and participates to field works);

Fouthe Ghislain: Documentation-manager (helps in managing all the administrative documents required through the entire project);

Tiwa Pauline: Field assistant (helps in socio-economic surveys, education and habitat assessment);

Tila Emérent: field assistant (helps in socio-economic surveys, education and habitat assessment).

12. Any other comments?

During exchanges with local people, they emphasize on the fact that many projects have already been carried out in DBR but not any follow-up strategy has been established in this regard.

According to ETU's population, the benefits of conservation actions are not shared with all the local people, as they said they feel as left aside of conservation benefits. These two above important challenges will retain our attention during the upcoming phases of this continuous project of pangolin conservation in DBR.