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	Fotsing Ernest Dadis Bush
Project title	Feeding Ecology in a western gorilla group under habituation to human presence for ecotourism in Campo'o Ma'An National Park (South Cameroon).
RSG reference	21845-1
Reporting period	June 2018
Amount of grant	£4992
Your email address	fotsingernest@gmail.com
Date of this report	June 01st 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
1) To investigate the feeding ecology and impact of anthropogenic pressure on the behavior of the study group.				
a- Determine type of food eat by western gorillas and identify important food species for their diet.				Feeding trails are the remains of food in situ, and may indicate gorilla patterns of movement. Traces were recognizable by the characteristic manner with which each food had been processed, and the particular plant parts discarded. Qualitative information was recorded, that is the species feed on and the part removed, and quantitative data was obtained after analysis on the number and frequency of items eaten. We obtained satisfactory results: 1280 species (rest of herbaceous and fruits species) in 15 family were identified within gorilla home range. We found significant variation in feeding ecology during each month and throughout a year within gorilla studied group. We concluded that when fruits are not available, gorilla feed more herbaceous vegetation (interpretation and analysis of our data show that those species was more abundant within each habitat type of gorilla group home range as show habitat plot data analysis). Even if, *Lacosperma secundiflorum* (Arecaceae (30, 46 %), *Haumania danckelmaniana* (Marantaceae (14, 92 %), *Hypselodelphis violaceae* (Marantaceae (8, 04 %), *Megaphrynium velutinum* (Marantaceae (5, 15 %) and *Megaphrynium macrostachyum* (Marantaceae (5, 15 %) were identify as vegetal species more feed by our studied group. When fruits are abundant, gorilla eat less vegetal species

				more feed by our studied group. When fruits are abundant, gorilla eat less vegetal species and more fruits. We collect and washed 857 feces of gorilla group and identified 31 species of fruits (with 4 species of herbaceous) in 20 family.
Assess important trees species used by gorillas as nesting site in disturbed and undisturbed areas, recoding nest characteristics (high, size, habitat type).				A total of 734 gorilla nests were examined throughout a year. 174 species of tree, shrub, liana and herb were identified, representing 110 genera and 44 families. Gorillas used 55%, 66% and 79% of the number of species, genera and families present in the research site, estimated from our botanical datasets at 314, 196 and 81, respectively. Trees, lianas and herbs were used in nest construction, with importance values of 8.2, 17.1 and 61.8, respectively. Herbs were 6.5 times more important than trees and 2.6 times more important than lianas. Only 4.8% of nests were built in trees. The monthly average number of nests built in trees was 0.2 ± SD = 0.6 (range: 0–2), and no correlation was found between the number of nests built in trees each month and rainfall (Spearman rank correlation; rs = 0.99, P= 0.381) or temperature (rs = 0.200, P= 0.300). Forty-six species (14.6% of the total number of species found in the research site) occurred in at least 10 gorilla nests, and were considered as frequently-used species. Herbs displayed the highest proportion of frequently- used plants, comprising nearly half of all species used. Within each plant group, the preference index varied among species, with standard deviations of 160.7 (herbs), 128.3 (lianas) and 24.4 (trees). Among herbs, *Aframomum* spp. (Zingiberaceae), and other species such as *Lacosperma secundiflorum, Hypselodelphys scandens, Haumania danckelmaniana, Hypselodelphis violaceae, Tetraberlinia bifoliolate, Megaphrynium macrostachyum, Megaphrynium velutinum, Marantochloa leucantha, and Marantochloa filipes* were highly preferred by gorillas.

				Manniophyton fulvum, Combretum sp. and *Macaranga bellei* were the most preferred lianas. *Grewia coriacea, Caloncoba welwitschii, Funtumia elastic, Diospyros preussii, Pteridium aquiline, Panda oleosa*, and *Klainedoxa gabonensis* were frequently-used as shrub and the most preferred species within the group 'trees'. All nests were built on the trees (DBH vary between 1 to 325 cm) with the high vary between 0 (nest on the ground) to 45 meters. We found 45%, 24%, 16% and 15% of herbaceous, shrub, mixed, no vegetative species respectively. Also, we found all nest within five habitats types inside gorilla home range. Nest diameter vary from 39-120 cm. We found that nest diameter of 90-99 cm was frequently used. As observed in other gorilla populations, suitability for nest building and availability of gorilla food in stems were the likely determinants of plant selection. The total number of species used per nest ranged from 1–9, with an average of 4.9. This is high compared to other sites, emphasising variability in the availability of nest building materials and habitat differences across the range of the western gorilla. Seasonal changes in the use of different habitat types for nesting did not appear to influence plant use for nest building as variation in plant selection across seasons was not strong enough to result in important changes in the composition of nests. Our findings suggest that gorilla's non- randomly select plant species to build nests, and use a particular set of species combined at varying proportions, with no clear seasonal or spatial patterns.

Collect data on human activities in the study group's home range in order to better understand how human activity affects gorilla spatial distribution and feeding behavior.				As provided in this study, we planned to assess using transects walk and reccee all type of human's activities occurring within gorilla home range. We found and categorised after analysis four type of human activities in the site. (Activities of forest exploitation companies, gathering activities, Hunting activities, trails of villagers). We estimated kilometric index of abundance of each human activity; hunting activities was 0,18 ± 0,07, gathering activities was 0,31 ± 0,09 and no signs of trails of villagers, activities of forest exploitation companies and extraction of honey was recorded within gorilla home range. Observation of those results show that human's activity is less important within gorilla home range. We test if human activity affects gorilla behaviour or gorilla spatial distribution within their home range using Kruskal Wallis test and found that gorilla behaviour cannot affected by human activity within their study home range showing increasing level of anti-poaching activity in the site but, further research and activity need to be investigated in order to get long term data regarding this particular aspect or subject.
2- Investigate food availability in the study group's home-range.				
Quantifying the density of herbaceous vegetation within each habitat type and the seasonality in fruit availability and the frugivory degree of gorillas via fecal analysis (this can allow to investigated the behavioral responses of gorillas to seasonal changes in food availability in order to understand the mechanisms leading to the diverse adaptations				Characteristics of habitat types: old secondary forest, young secondary forest, swamp, riparian forest, light gap and near primary forest represented 35%, 31%, 20%, 6%, 5% and 3% of the total forest cover, respectively. Habitat types contrasted in terms of visibility, light score and THV density. Stem densities and distribution of THV species. We inventoried 33 herb species, belonging to 15 families. Average herb density was 3.98 stems/m2, and stem density did not significantly vary across habitat types (Median test: $\chi 2 = 4.76$; df = 4; P = 0.315). A total of 100 plots distributed within six habitat.

of the apes to different environments)				Overall THV density was ≥3 stems/m2. *Haumania danckelmaniana* was the most abundant species whereas *Afrocalathea rhizantha* was the rarest species. *Marantochloa congensis* occured only in open raphia free swamps and showed the most pronounced clumped distribution of all THV species, with a coefficient of dispersion of 14.78 and a local density of up to 15 stems/m2. Similar patterns were displayed by *Sarcophrynium prionogonium, S. brachystachyum, Aframomum polyanthum* and *Trachyphrynium braunianum*. All species exhibited a clumped distribution, but not to the same extent. Marantaceae occurred at the greatest density and comprised 89.72% of stems. Marantaceae and Zingiberaceae occurred in 49.07% and 10.79% of all plots surveyed, respectively. Marantaceae tended to form bigger clumps than Zingiberaceae, with coefficients of dispersion of 6.98 and 4.44, respectively. Of the 22 THV species surveyed, six (*Ataenidia conferta, Halopegia azurea, Aframomum* sp.3, *A. polyanthum, M. congensis* and *T. braunianum*) were exclusively found in flooded forests. Other species of *Aframomum* (Zingiberaceae) as well as *Megaphrynium macrostachyum* (Marantaceae) were abundant and formed bigger clumps in light gap and young secondary forest. Fruits availability New leaf, flower and fruit production of 341 individual trees of 20 important species for the western gorilla was monitored monthly along permanent transects. We recorded the percent abundance of ripe fruit in the crown and on the ground for each tree, scoring between zero and five (0 = 0 to 1% 1 = 1 to 25% 2 = 25 to 50% 3 = 51 to 75% 4 = 76 to 100% of crown and/or ground covered; such scores were assigned based on the maximum crop size of each species in relation to its fruit size (e.g. a species with large fruits produces a relative smaller crop size in comparison to species with small fruits)

				The mean DBH (diameter at breast high) and the density of tree species ≥ 10 cm was 14,67 ± 5,26 cm (vary between 10-370 cm) and 10,46 trees/ha respectively inventoried within 13 ha calculated from 20m X 20 m plots placed every 100 m along 1000 m along each transects, which were placed systematically in 25 500 x 500m quadrants in the group's home range estimated at 13 km2 (size of the area used on a monthly basis). Finally, a monthly score of fruit abundance was calculated using a fruit availability index (FAI) calculated for each tree species as the product of the mean DBH from trees sampled in the vegetation transects. As reported above, we assess frugivory degree by fecal analysis. We found that feeding ecology of gorilla is more flexible throughout a year. Our studied group confirm many observations made in the past by several authors and become very interesting model to pursued our investigation about this topic because, they are folivore-frugivores that adjust their diet and activities to seasonal variation in fruit availability.
3- To set the baseline data needed to monitor the long- term impact of gorilla tourism in Campo Ma'An National Park and to guide project managers towards impact-optimization guidelines and activities.				
Literature review: - Analysis of existing literature on the impact of gorilla tourism on the gorillas' behavioral, ecological and health patterns; on the gorilla population in the areas where tourism is conducted (e.g. Dzangha Ndoki National Park etc.) and on the poaching pressure; on the perceived and accrued benefits to the local population (outputs: by looking at available documents with detailed				After conduct survey within local population, and analyses of existing literature we found that: the relatively easy access to Campo Ma'an National Park, South Cameroon, and its proximity to the already well-developed tourist destination of Kribi (famous for its beaches) make this area ideal for developing its tourism potentials. The setting up of a competitive high- end tourist product, through the development of a controlled gorilla tourism programme, was identified as a potential conservation tool, to generate much needed income for park management, provide benefits to the local population, and raise local and international support for the protection of the area and its gorilla population.

literature review on gorilla tourism impact (e.g. Best Practices Guidelines of IUCN).				However, there are serious potential negative impacts associated with gorilla tourism (included disease risks, increased vulnerability to poaching, generating high expectations and diversion of conservation funds) which need to be addressed before starting any real great ape ecotourism in the future.
Impact on the habituated gorillas				We conduct an analysis of the preconditions outlined in the IUCN Best Practices Guidelines for Great Ape Tourism (Assessment Phase); and we formulated the recommendations on whether gorilla tourism should be developed at Campo Ma'an and under which specific circumstances.
Monitoring of gorilla behavior: Records of all first reactions to observers are collected (including compounding variables such as: distance, position, vegetation type), at the onset of the gorilla habituation program (outputs: Baseline data of current gorilla behavior upon encounters with humans)				- The gorilla habituation feasibility study confirmed the presence of large gorilla groups in the Dipikar Island sector. - However, the current poor level of law enforcement and protection of the park and the lack of participation and support to the process by some of the main stakeholders are the two principal factors who'll probably limiting the potential development of gorilla tourism at Campo Ma'an. Thus, in the optic of promoting a tool to benefit the protection of gorillas, their area and the local population, some recommendations was formulated as condition sine qua non, in order for WWF to engage with the other partners and stakeholders in developing gorilla tourism at Campo Ma'an.
Monitoring of ecological pattern: Records of the groups' locations, distances travelled and cumulative home ranges, from the onset of the gorilla habituation program (outputs: Baseline data of current ranging and activity patterns).				Throughout this study, our gorilla group was follow during 220 days with 513 contacts made with total duration 59901 minutes. Gorilla groups spent most of their time feeding (47, 2%), resting (25, 1%), travelling (20, 9%), social activities (5, 1%) and other activities (1, 7%). We noted significant variation of gorilla behavior faced to the trackers during habituation process throughout a year from aggressively to the start of ignorance. Male response varies each month.

				First three months he was too aggressive (56, 8%), with less curiosity (21, 6%) in the three months next he became more ignorant (56, 5) and avoid observers (21, 6%) after 8 months of habituation process. Also, synthesis of our data show that female and other individuals within the group wasn't too aggressive throughout a year. Avoidance (46%) and fear (23%) was the main reaction of other members of the group during the study period. Feeding time was significantly affected by season. However, we found no significant difference in the proportion of time group dedicated to feeding within the same season. Season had no significant effect on the time gorillas spent resting. Season significantly affected the time gorillas spent travelling. Season had no significant effect on the time the gorillas spent for other activities. During study period, we made contact with gorilla, distance and frequency below: 0-5m (7%), 6-10 m (49%), 11-20 m (43%), 21-30 m (1%) respectively. Further investigation concerning gorilla contact need to be conduct in order to complete data regarding habituation process of this gorilla group and better understand gorilla reaction during habituation process in long period. This will help to better understand this group behavior when they will completely habituated.

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

During the implementation of the project, we were unable sometime to travel from Campo'o town and from Campo'o town to the field site as we need due to the bad quality of road during raining season. To afford this issue, we sometime took big motor bike and travelling sometimes 2-6 days before arriving in Campo'o and in the field site.

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

First of all the present study helped to confirm feeding ecology of gorilla group under habituation in Campo'o Ma'An National Park. We found 1280 species in 15 family feed by gorilla group. No significant variation in feeding ecology during

each month and throughout a year within gorilla studied group was assess. We concluded that when fruits are not available, gorilla feed more herbaceous vegetation. We also found that there's not a lot of human signs within gorilla home range and there's also no influence of human signs on gorilla behavior. Some parameters of nesting behaviour were also assessing. From practical point of view, these data will help the conservation and sustainable use strategy for Campo'o Ma'An National Park (CMNP). We elaborated multivariate database on the feeding ecology of gorillas which will be useful for informed practical conservation strategy in the area.

Secondly, Diversity and community composition of herbaceous plants in different habitat types was assess. We found that diversity patterns and community composition of plants vary across habitats and will help to describe forest types and to estimate forest age. We provided first quantitative data regarding food availability of gorilla group under habituation in Cameroon. We concluded that, the most important environmental factor explaining interspecies variation in ecology and sociality of the great apes is likely to be variation in resource availability. Relatively little is known about the activity patterns of western lowland gorillas (*Gorilla gorilla gorilla*), which inhabit a dramatically different environment but, this study provided some response about this subject especially in Cameroon.

Thirdly, with this first gorilla behavioural (number of contact made, type of reaction face to the observers etc.) data, we concluded that gorilla can be completely become habituated in Campo'o in one or two year again and tourism can be the principal activity who can allow the local population and community to acquire or to developed theirs locality. This study presents the results from the gorilla habituation feasibility; assesses feasibility of developing gorilla tourism at Campo Ma'An by conducting an analysis of the preconditions outlined in the IUCN Best Practices Guidelines for Great Ape Tourism (Assessment Phase); and formulates the recommendations on whether gorilla tourism should be developed at Campo Ma'an and if so, under which specific circumstances. Our study confirmed the presence of large gorilla groups in the Dipikar Island sector.

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

First of all, this project took place within gorilla habituation program in collaboration with in situ WWF programme. Noted that all field (guides/trackers, cookers, porters etc.) people are locals communities including Baaka pygmy who lives around national park.

In the course of this project, we always spent some time (3 to 7 days) in Campo'o town, a village were we have to employ specific local guides of our study (and train them if necessary). We also depend on local restaurant for feeding during this time period. We purchased all the equipment to be used in the field, some medicine and meals in this village as to improve the income of local communities.

The study was carried out with the help of the local communities who assisted in all stages of the survey (e.g. my two locals botanist was choose within local

population). Local population were used as field guide or porters throughout the project. They were trained in scientific monitoring techniques (use a GPS device, how to conduct transects and habitat plot data collection regarding botany study, collect samples and store them etc.). During the surveys, they understood the importance to conduct such studies in order to protect their local forest resources from disturbance by using some herbs species inventoried as bio indicators of habitat change.

This project was important for us to establish important links with local authorities from the target localities one member of the community called Antoine Ndongo was particularly interested by our project and was working with us throughout this first year. He learn all our data collection methodology and he's is also the main guide who's is able to replace me if I not available. We are exploring the options to keep working together giving the fact that we plan to continue this study.

5. Are there any plans to continue this work?

Yes. As I mentioned in the first Rufford Small Grant, the overall objective of my project is to complete my PhD data collection (and defend it) and collect data until gorilla become completely habituated. The next plan will be to pursue our research on behalf of nature conservation. Since this project is conducted for my PhD research, I am currently in the 1st year (of 3 years) and more data are needed to achieve the main objectives (e.g. nest decay rate assessment has not yet assessed throughout a year). We also plan to confirm the suitable habitat for gorilla using data from both season. Habitat suitability for gorilla need to be investigated and will also help to organized and orientate the conservation efforts. Future data will help to *proposed strategy to* improve the management plan of gorilla in Campo'o National Park. We also plan to pursue data collection on gorilla behavior until the group will be completely habituated. For the above reason we definitely are going to continue with this work because, much more is needed to be done.

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

We have recently presented the first findings of the project at the oral session at the 25th Annual Conferences of the biodiversity Biosciences Society organized from November 28th to 2nd December 2017 in Dschang, Cameroon. In addition, to reach out to a wider audience outside the scientific community, I have produced and disseminated the posters to local field guides, porters and village chiefs living around in Campo'o town.

I will also submit the following manuscript for publication in a peer reviewed journal during the next months: Contribution to the understanding of habituation process of gorilla group in Campo'o Ma'An national park.

Feeding ecology of gorilla group under habituation group in Campo'o Ma'An national park.

The paper will be made available to Rufford Foundation and scientists through different congress, meetings with biologists, ecologists and conservation institutions with several presentations.

Now, we have two master students who're preparing their defence. Their theses will be put inside the bookshop of our university and other student or university community will read and used it as a reference.

In order to share our results with the broadest academic and scientific community the data will be presented at the University of Yaoundé I, at national and international conferences/seminars and international publications will be produced. Regarding the impact of our project for gorilla conservation at the local level, our data will be shared with the staff of the WWF of Campo'o Ma'An National Park and the MINEF (Ministry of the Environment and Forestry of Cameroon) with the aim of guiding the anti-poaching battle patrols in the target zones (zones of high anthropogenic pressures and areas of high animal concentration) and to properly guide the management and conservation strategies of the national park in general and of the gorillas in particular. Moreover, we intend to diffuse and share our data with other international NGOs and research institutes (e.g. Wildlife Conservation Society, National Agency of the Forest, Zoological Society of London, African Wildlife Foundation, Max Planck Institute, etc.), who act locally for forest and primate conservation with the aim also of better reflect the needs for the assessment conservation area planned for 2018. Particularly, sharing with the World wide Fund for nature (WWF) our priority conservation list of food/trees of gorilla diet will be able to adjust the local conservation strategies

This field work forms part of my PhD studies presently at its writing phase and a final version will be deposited in libraries for public use.

I intend also to attend scientific meetings at the training course Conference on Conservation Science, Cambridge (organized by TBA association) in UK where I could present the results of our work.

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 time plan of my project was from June 1st 2017 to June 1st 2018. I used the grant in the same length of time.

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
Per diems (food /meals for field team members in the field throughout the year)	£2880	£3600	£-720	Meals for staff members in the field wasn't as initially budgeted due to price inflation in the market. We planned to spend 2£/ person for nutrition. Due to price inflation we rather spend 2.5 £/person.
Guides field salaries (local botanist, field guide etc.)	£2112	£2880	£-768	Field team salaries wasn't as initially budgeted due to the fact that local guide and our local botanist refused 2.20£/day as we budgeted. In order to create the cordial environment with our field team, we were obligated to negotiate. After negotiation, they accept 3£/day.
Total	**£4992**	**£6440**	**£-1488**	**We cover surplus of £ 1488 with Jana trust grant we obtain.**

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

The important next step currently, is to complete the revision of the first manuscript (contribution to understanding of behavioural ecology of gorilla group under habituation in Campo'o Ma'An National P ark) we have drafted and provided to submitted to American Journal of Primatology, completed and continue our data collection because, (I am currently in the 1st year (of 3 years) as mentioned above, more data are needed to achieve the main objectives of our big project (e.g. nest decay rate assessment has not yet assessed throughout a year)), defend my PhD thesis and continue to work toward this great WWF project until gorilla become well habituated in Campo'o Ma'An national park.

With the experience acquired in the field during this first year, it'll be very important in the future to promote and enhance forest protection, natural resources, biodiversity especially gorilla in this area. It'll be also very important to provide and sustain educational program to ensure villagers and politicians to understand the importance of protecting these animals and created a spirit of conservation

throughout the community.

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, we used the RF logo on materials we produced such as some leaflets and posters presented during workshops at the University of Dschang and during national scientific conferences recently held at the University of Dschang, West Region in March 2017. The RF logo has also been used in different occasions during presentations about our projects as PhD student in 2017. Our masters student also used RF logo inside their thesis. We also made publicity about RF last year during the World Wildlife Day.

I also planned to use RF the logo in my future presentation of the project at the oral session at the 25th Annual Conferences of the Cameroon Biosciences Society organized from November 28 to December 02, 2018 in Dschang, Cameroon. I also used the logo in posters of the project to sensitize local population and students about the effect of human disturbance on gorilla.

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

Antoine Ndongo and **Engo'o David** was my Local botanists.

Edjo'o Martin, Edo'o Abel, Essama Wilfired, Mabah jean, Ebana Jean Claude, Olinga Martin was gorilla trackers and local guide.

Mireille Engong was the cookers and camp keeper.

12. Any other comments?

We are extremely grateful to the RF for granting us such a great opportunity to contribute to species conservation in Cameroon. Without this RF we could never have accomplished what we planned this first year and contributed to better understand behavioural ecology of these critically endangered species in Cameroon.

With this first year of field experience, I concluded that we also need RF support for the continuation of our project because, lot of work need to be done in Campo'o regarding implementation of conservation issues and we need to involve more local population in conservation activities and within our project under different levels of involvement.

We are especially grateful to Jane Raymond for all her tireless efforts and especially her availability and loyalty in front of grants beneficiary.

We thank WWF-Cameroon to provided us good research collaboration, field space and for her logistical help during this first field year phase. We also thank

Campo'o Ma'An WWF team for good collaboration during our work and Campo'o Ma'An national park conservation services to provide us sometimes Ecoguards for antipoaching patrol within gorilla group home range.

We thank the traditional chiefs and all local people of Campo'o including local guide for making the project successful. We greatly thank Dr Shelly Masi, University of Paris 6 (MNHN) for his precious advice on appropriate design and data collection methods.

Left: Rest of fruit specie eat by silverback (unidentified yet). Right: Rest of herbaceous vegetation specie (*Anchomanes difformes*) eat by gorilla.

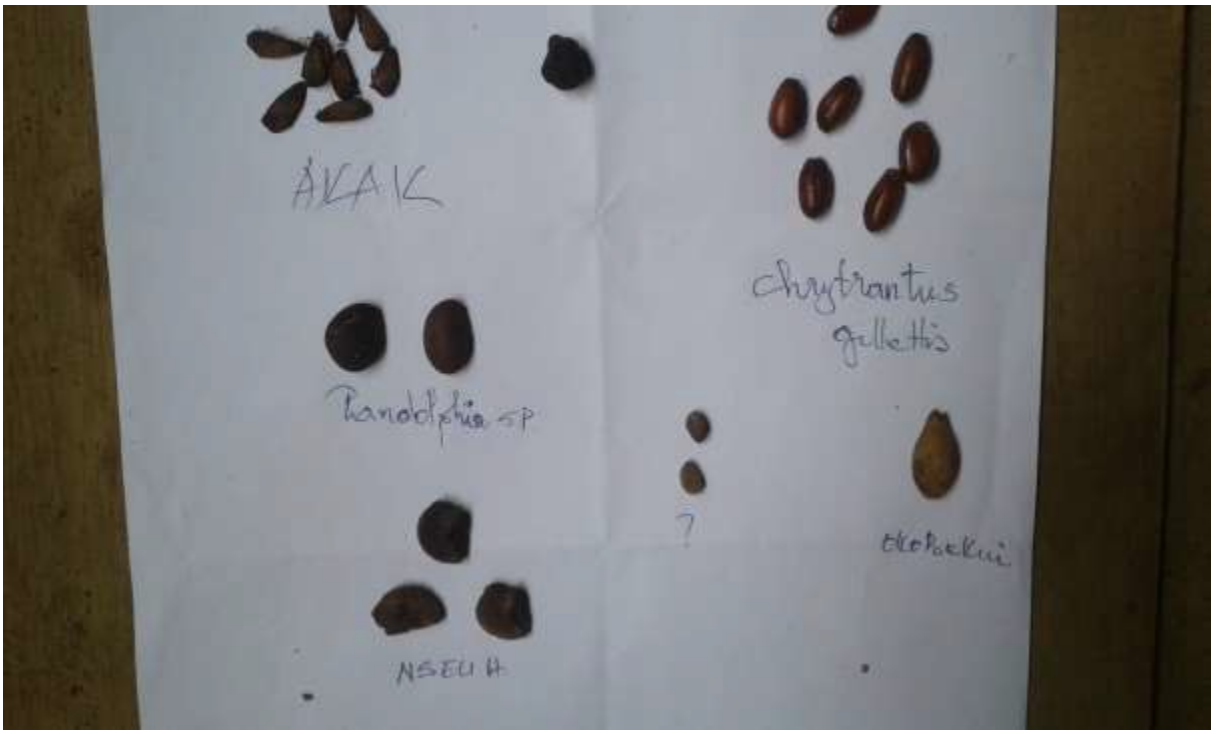
Left: Rest of *Calamus deeratus* (liana) eaten by a gorilla. Right: Rest of AKAK fruit (*Dubscia macrocarpa*) left on the ground by ape.

Bark of Eyong (*Eribloma oblongum*) peeled and feed by gorilla group member

Left: Rest of *Irvingia gobonensis* (fruit) eat by gorilla group. Right: Rest of *Diospyros sp*. Fruit eaten by gorilla silverback.

Left: Ground nest of silverback. Right: No vegetation nest.

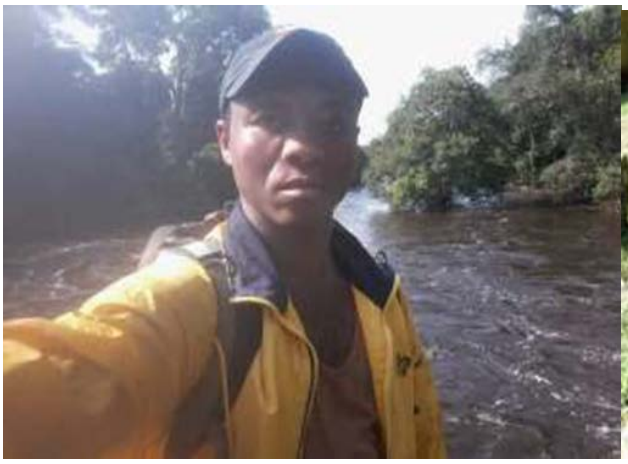
Left: Fecal sample in a sieve preparing to be watch for d=fecal analysis. Right: Big stone found in fecal sample, swallowed by a gorilla



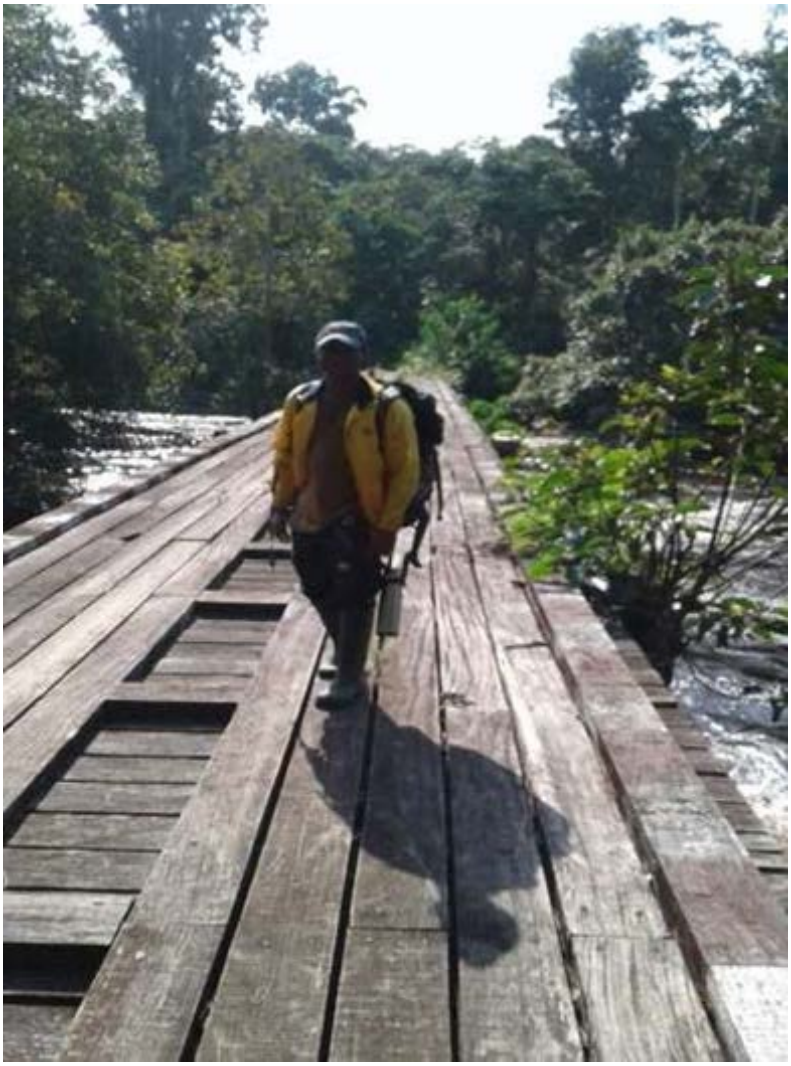
Some seed found in gorilla fecal sample during washing process.

Gorilla habituation camp

Local botanist during measurement of DBH and n) in the field perpendicular distance of the feeding trees of gorilla along the transect.




Left: Ntem River who surround the study site (Dipikar islan). Right: Ready to move in the field one morning.



Crossing Ntem River Bridge for going to habituation camp

Silverback of our studied group (Fotsing, 2017 JPEG)

Young female of our studied group take during one contact made with the group during habituation process (Fotsing, 2018JPEG).