Department for Environment Food & Rural Affairs

DARWIN INITIATIVE

Funded by UK Government

Darwin Initiative Main/Post/D+ Project Half Year Report

(due 31st October 2018)

Project reference	24-029
Project title	Enabling Baka attain food security, improved health and sustain biodiversity
Country(ies)/territory(ies)	Cameroon
Lead organisation	Manchester Metropolitan University
Partner(s)	Zerca y Lejos (ZyL), CIFOR
Project leader	Prof. John E. Fa
Report date and number (e.g., HYR3)	28 Oct. 2018, HYR2
Project website/blog/social media etc.	

1. Outline progress over the last 6 months (April – Sept) against the agreed baseline timetable for the project (if your project has started less than 6 months ago, please report on the period since start up to end September).

The following narrative follows the agreed baseline timetable for the project. Here, we also report progress on the outputs. We include information on activities undertaken during the reporting period and where relevant, a summary of outputs and performance for the previous year.

Overall

During the first half of the second year of the Darwin project, we continue generating information on use of wildlife resources, health assessment and support of agricultural activities. We have been able to integrate other team members through the generation of new funds, and have formed close liaisons with Cameroonian experts and students in support of our work. We have already collected substantial data that will form the evidence base for the next phase of the project. All data will be analysed by Dec. 2018.

All activities undertaken with our Baka communities are undertaken fall under a very clear FPIC process. Regular meetings are also organised with the local authorities and organisations in our Community of Practice (see Appendix 1 for meetings held during this half-year period). Meetings with all the Baka communities will be held in March 2019 to launch the last phase of our project. During these meetings we will present all of our findings and use this information to pave the way to discussions with the communities on how we can work together towards improving livelihoods and protecting their environment.

Team composition and new initiatives

We continue with our full Darwin field team without any changes (see Appendix 2).

Autonomia project

We were able to incorporate two extra staff members as a result of funding obtained by ZyL. A total of 40,000 Euros was awarded by the *Grupo de La Rioja Alta, S.A*., Spain, in a competitive bid for funds within their *Ayuda al Desarrollo 'Viña Ardanza Solidario'* funding program (proposal available on request).

This new community project is part of ZyL's continuing '*Autonomia y Derechos Humanos'* program (hereafter '*Autonomia'*), the NGO's overarching platform of agricultural support and assurance of human and land rights for the Baka people. This program will continue beyond the lifespan of the Darwin project. The '*Autonomia'* project is totally aligned with our Darwin project.

The Darwin team spearheaded the process of the selection of the *Autonomia* team members. First, the job description was posted in relevant departments (Anthropology and Sociology) at the universities (University of Yaoundé I, University of Yaoundé II) in the capital. A total of 54 applications were received, out of which 11 were shortlisted. Mr. Hevé Freedy Mpand and Ms. Zibi Obe Marie were chosen. All interviews were conducted with the collaboration of Ms. Trinita Irombre (Project Coordinator, ZyL-Cameroon), Mr. Mabou Delors (Coordinator, Strategic Alliances of ZyL-Cameroon) and Mr. Chintouo Bachir (Volunteer Collaborator ZyL-C) at the ZyL-Cameroon headquarters in Yaoundé. Mr. Pablo Simón prepared the questionnaires used during the two series of interviews. Mr. Guillermo Ros took part in all interviews via Skype.

Project activities started in September 2018 and will end in May 2019. The *Autonomia* team will work in the Mimtom region with various Baka and Bantu villages, including the 10 Darwin Baka villages. After an initial introductory period to get to know the communities and to introduce the project, their starting point has been to determine the communities' needs and resources. These initial assessments have helped identify the communities' strengths and weaknesses so as to inform the project's planned activities.

The *Autonomia* project's main outcome will be the reinforcement of self-determination rights of the Baka by capacity building activities that support the communities' legal access to agricultural and natural land, as well as to strengthen their knowledge and understanding of territorial and legal rights. The team will also work closely with the target communities to: 1) found local farming cooperatives where farmers can pool their resources; 2) improve community savings and the management of economic resources, as well as allow these communities to: 3) understand the roles and obligations of public administrations and 4) their rights and obligations as national and indigenous citizens.

Incorporation of Spanish PhD agronomy student

Ms. Consuelo Farina joined our team in Cameroon (Agronomist and PhD student in Rural Planning and Sustainable Project Management, Universidad Politécnica de Madrid) in September 2018. Consuelo will be supporting and training our agricultural ground team, Mr. François Fouda and Mr. Layang Robert, and systematically assessing the agricultural outputs within our Darwin project. This will also include the development of an agricultural plan for the recovery of abandoned cacao plantations. Consuelo's results will add to the work IITA will be undertaking within our project (see below).

Traditional use of medicinal and food plants by the Baka project

Through our links with Dr. Jean Lagarde at the University of Bertoua and the University of Douala, we have signed an accord to start a project on the use of medicinal and food plants by the Baka communities within our study area. Dr. Betti will be providing a number of students to work in the Darwin villages to document and understand the importance of wild plants to the communities. The Darwin project and ZyL will be providing logistic support.

The planned project would commence in November 2018, to end in March 2019, pending funds being made available. In this project, we will gather data on the plant species employed by local communities and characterize their traditional usage and describe species used as well as

conduct market chain analyses of traded wild plants by both Baka and Bantu communities.

Data on use of wild plants will be used in conjunction with the information gathered on the extraction of wild meat in this project, to improve our knowledge of the level of dependence of Baka populations on natural resources.

Brief description of progress by outputs

Output 1: Research outputs developed and shared with target audiences (local government, villagers and international development community)

We have already completed a paper on the application of WHO child growth standards to the Baka (Appendix 3). This paper, one of the outputs from the health screening data gathered by our team of medics, was submitted to *The Lancet* journal on Oct. 26 for possible publication in this journal. We are confident that these analyses can highlight the importance of using ethnic-specific growth standards. We are currently completing a second paper on the health status of the 10 Darwin villages. Although these data analysed and written as a paper to be sent to a journal for publication, we will use these to understand the relationship between the health of our study populations, nutrition, and use of agricultural and wildlife food resources, as intended in the Darwin project.

We still plan to deliver at least four articles by the end of the project on: 1) hunting and hunting sustainability by the Baka; 2) dietary and nutrition intakes of the Baka; 3) linkages between wild and domestic foods and human health in the Baka and 4) faunal status and changes over time in community areas inhabited by the Baka.

Output 2: Databases created and made available for use by nutrition practitioners and field managers.

All data generated by this project to be distributed freely amongst the relevant authorities in Cameroon, and with colleagues and partners working in development and conservation issues. In our project we have placed particular emphasis on assembling nutritional composition of foods grown and collected by the Baka, particularly to understand the contribution made by wild foods to their nutritional wellbeing. Analytical data and information on macro- and micronutrients of domestic and wild foods in Central Africa is available, principally for the more common foods. However, there is still a lack of data on wild foods. The addition of data on the use of wild plants to be collected by our Cameroonian colleagues, especially Dr. Jean Lagarde Betti (see above), will complement the information gathered by our team on wild meat. These joint databases together will allow us to develop a more complete picture on how and what uses Baka communities make of NTFPs.

Output 3: Hunting use zones maintained with hunters and meat traders across 10 communities respecting agreed quotas.

3.1. Participatory mapping of hunting zones

As for our 5 villages (Phase I) in Y1 we will develop participatory maps detailing hunting areas used by each community for the Phase II villages. We will generate maps, aided by remote sensing land cover analysis, involving focus groups with key informants from each village.

Phase II of the participatory cartography was carried out between 20/09/18 and 15/10/18. During these meetings we first allowed participants to present any issues and problems they were facing with regards to use of resources and their understanding of their current living conditions. Following these discussions, we carried out the participatory mapping exercise. A total of 239 villagers (women, men and children) participated in these meetings.

The resulting maps allow us and the community to identify forest areas that can provide wild meat and also other wild products. These maps will also permit better monitoring of these against non-community hunters and illegal use. The maps show that the hunting areas vary in

size, most of them start relatively close to the settlements. Further analysis of these hunting areas will be conducted once we have repeated the process in the five villages of Phase II.

3.2. Hunter offtake and hunter follows

Hunting information gathered from the 10 Darwin villages will be used to understand the use of wildlife resources by villages and assess their impact. We divided our hunting data-gathering program into two phases of 5 months (5 villages per phase), as explained in our YR1 report.

a) Hunter offtake

We gathered hunting data for the five Phase I villages (Bemba II, Nkolemboula, Doum, Assok, Belle-Ville) for the period 12/03/18 – 10/07/18. All data collected by our village reporters have already been collated and are now stored and available for analyses.

A total of 104 hunters participated in this data collection phase, 26 more than anticipated (see YR1 report). We now have 6,485 hunting records (Table 1), comprising information on the hunting of 44 different game taxa; reptiles (n = 6), birds (n = 5) and mammals (n = 33).

Table 1. Number of hunters participating and hunting records obtained on hunting practices the five Phase I villages in the Darwin project.

Village	Hunters	Hunting records
Assok	16	748
Belle-Ville	14	1,085
Bemba	34	2,429
Doum	15	1,236
Nkolemboula	25	987

We commenced work with the five Phase 2 villages (Akonetge, Adjab-Mimton, Oudoumu, Meyos-Mimton and Akom) during the present reporting period. We visited these villages during the week of the 3rd September 2018, to introduce our project to the traditional village chiefs[1]. In further meetings with villagers, we were able to identify and employ 5 village reporters, one for each community to gather hunting data, as undertaken for Phase I villages. A follow-up training meeting was held with the appointed village reporters to go over working methods and reporting practices. Minutes of all meetings held were kept.

Village reporters in the Phase II villages started collecting data from hunters on 17/10/18 and will continue until February 2019.

b) Hunter follows

From the total of 70 hunters (from Phase 1 and 2 villages) that agreed to wear a wrist-held GPS to self-monitor their hunting ranges, we have now data from 23 Phase I hunters. Between April and July 2018, we were able to collect a total of 240 hunting itineraries (Table 2).

Table 2. Number of hunters participating and hunting records obtained on hunting practices the five Phase I villages in the Darwin project.

Village	April	May	June	July	Total
Assok		7	15	6	28
Belle-Ville	4	29	11	7	51
Bemba	1	6	13	4	24
Doum		24	35	33	92
Nkolemboula	2	5	15	23	45
Total	7	71	89	73	240

[1] Note that all village representatives in our Darwin project were made aware of the project at the start of our work; see our YR1 report for further details, and evidence of meetings.

All hunter GPS tracks have been transferred to our GIS platform and currently undertaking spatial analyses on these data. By overlaying all tracks, we will be able to generate use maps and from these demarcate areas of importance for hunters in each of the Darwin villages.

Collection of GPS tracks from hunters in the five Phase II villages commenced on 17/10/18 and will continue until February 2019. A total of 56 hunters are currently participating in this part of the project (Appendix 4).

c) Reproductive cycles of game species

With the support of Dr. Pedro Mayor (University of Barcelona) and Mr. Hani El Bizri (Manchester Metropolitan University), scientists working with the Project Leader's research team on hunting and reproductive biology of Amazonian game species, we have now prepared protocols for collection of data on reproductive cycles of the main prey species in our study area. Funding for this is being sought, and when available we will engage again with the University of Bertoua to train Cameroonian students to perform this work in the field.

Output 4: Independent measures of population status of protected fauna available for management purposes.

4.1. Camera trapping grids in identified hunting zones

Camera trapping has been used to record medium to large mammals and terrestrial birds in the hunting areas defined by our study communities. We will use the data gathered to determine the state of hunted fauna in these sites by determining whether there has been selective local extinction of large-bodied species or populations (defaunation).

We removed cameras traps laid out in the first three grids in Y1 between the 6/7/2018 and the 13/6/2108. We lost only 4 traps out of a total of 37 placed (36 in grids and one extra one along an old elephant path). Trap removal was carried out by Mr. Kentatchime Fabrice, a collaborator working for the Zoological Society of London (ZSL) under the supervision of Richard Okale. All images are now with our MMU Faunal Analysts (FAN), Dr. Selvino De Kort and Dr. Bradley Cain for post-hoc analysis.

Preliminary analyses of the 18 Gb of images obtained from the 33 camera traps recovered, have detected the presence of at least 41 different taxa in the three grids (2 reptiles, 8 birds, 31 mammals). Threatened species such as giant pangolin, leopard, mandrill and chimpanzee occur in the area, some of them in high numbers. Occupancy analyses, which will be completed by the end of 2018, will determine relative abundance and distribution of the more common species.

Placement of another three camera trapping grids around the Phase II villages' hunting areas is planned for early 2019. These grids will be positioned according to the maps generated through participatory mapping for the Phase II villages. We intend to employ Kentatchime Fabrice to set up the trap grids and then collect traps on completion. Our MMU Faunal Assistants will be involved remotely in advising our ground team on the setting up of the three new grids. They will not be travelling to the field to do this, due to costs.

4.2. Hunter and fisher perception surveys

Hunter and fisher surveys have been completed in the five Phase I villages. A total of 45 fisher and 51 hunter questionnaires have now been applied among the five villages. All data were gathered using hand-held devices, using the program Open Data Kit (https://opendatakit.org). We have started applying fisher and hunter surveys in the Phase II villages and all questionnaires will be completed by February 2019.

Table 3. Number of household, fisher and hunter surveys applied within the five Phase I villages in the Darwin project.

Village	Households	Fisher	Hunter
Assok	12	6	11
Belle-Ville	8	7	9
Bemba II	12	10	12
Doum	12	9	12
Nkolemboula	9	13	7
Total	53	45	51

Output 5: Improvement of human health and livelihoods achieved through an increase in dietary intake, nutritional status, and medical interventions.

5.1. Household income and wealth surveys

We were able to apply household surveys (HHS) in 53 households within the Phase I villages (Table 3). All surveys were undertaken by Okale Robert. We will be performing another large sample of HHSs in the five Phase II villages. We aim to obtain data on at least another 50 households for this next Phase.

5.2. Baseline survey of health status of Baka population

The results of the first health campaign in March 2018 are now being analysed, with a paper sent for publication. The database on anthropometrics and disease will allow us to determine malnutrition levels in all our study populations. We will analyse the health of these communities against a background of access to wild and agricultural products. Although we are aware that these correlations are to be interpreted with caution, we are confident that we have the expertise and sufficient sample sizes to triangulate between health and food production and access.

5.3. Baseline survey of agricultural production and activity

We continue our work with ZyL in supporting the improvement of cultivation of food crops. Led by our agronomist, Francois Fouda, we work regularly with the participating families through focus groups and specific instruction sessions. Data on crop production are currently being gathered so as to determine the success of our initiative.

Additionally, through the suggestion made CIFOR-Cameroon, we contacted the International Institute for Tropical Agriculture (IITA), based in Yaoundé, to advise us and to review our current agricultural practices to improve these, increase knowledge of participating families, and overall ensure a sustainable agriculture and the food self-reliance of our study communities. Together with IITA, we will develop indicators to help our team better monitor the work being carried out.

We have signed a contract for an IITA consultant to start work in the field in Nov. 2018.

5.4. Food consumption and nutrition surveys

A photographic catalogue of all food items consumed by the Baka communities has been completed.

After translation into French, we tested the use of the USAID Household Food Insecurity Access Scale (HFIAS) during April and May 2018 in our study villages. We concluded that this method was not directly applicable to the reality on the ground (questions are too abstract, and people did not understand their meaning) and therefore could not be used to represent the actual nutritional situation of our study population. Given these shortcomings, we adapted the questionnaire, and sought advice from Prof. Barrie Margetts (Southampton University) and Dr. Amy Ickowitz (CIFOR), both experts in the field of human nutrition. Their feedback was most useful. We will be applying the new questionnaire in Feb. 2019. The information gathered with this questionnaire will give us a broad understanding of whether our Baka population are

compromised in terms of availability of meals.

We started collecting data on food consumption within a sample of households in Assok, Belle-Ville, Bemba II, Doum and Nkolemboula. Information on daily caloric intake and dietary diversity within each household was obtained through the application of the "24-hour recall" method. This method consists in collecting information on all foods cooked and consumed inside the house, as well as the amount of each in a period of 24 hours. E.M., our Health Officer, with our Baka assistant Susana undertook this work.

We will be conducting a protein consumption survey, applied to schoolchildren. This method has been applied before in Africa and South America by Dr. Nathalie van Vliet[2], a CIFOR colleague, and has been particularly successful in generating cross-sectional data on types and frequency of consumption of different meats. This study aims to obtain information on the importance of animal protein in the diets of the populations studied, including meat and fish. The subjects of study are students aged 8 to 12, Baka and Bantu that currently attend the Catholic schools of Djoum and Mimtom; ZyL runs these schools. The study consists of a questionnaire combining open and typical questions about the type of meat and fish eaten the day before at home, as well as the child's preference for one type of meat or another. This study includes a prior informed consent process overseen that will be approved by the Ethics Committee in CIFOR; we will inform parents and guardians of children about the purpose and conditions of the questionnaire, so that we can obtain their voluntary consent on a voluntary basis.

Since some villagers spend time in the forest to carry out various activities, part of their diet is consumed informally outside the home. In order to document this intake we have recruited a sample of Baka men and women, volunteers from our study villages studied, to record foods eaten outside the house (but also in the house), over a period of several weeks.

2a. Give details of any notable problems or unexpected developments/lessons learnt that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities.

There have not been any significant problems in the execution of our work.

An issue, perhaps, is the fact that funds from Darwin have to go to MMU and then distributed to ZyL, causing a certain amount of delay. This would not be a concern if NGOs, like ZyL, had enough funds to cover the shortfall until MMU paid out.

2b. Have any of these issues been discussed with LTS International and if so, have changes been made to the original agreement?

Discussed with LTS:	Yes/No
Formal change request submitted:	Yes/No
Received confirmation of change acceptance	Yes/No

3a. Do you currently expect to have any significant (e.g., more than £5,000) underspend in your budget for this year?

Yes ☐ **No** ☒ Estimated underspend: £

3b. If yes, then you need to consider your project budget needs carefully. Please

[2] van Vliet, N., Nebesse C., Nasi, R. (2015). Bushmeat consumption among rural and urban children from Province Orientale, Democratic Republic of Congo. *Oryx*, **49**, 165-174.

remember that any funds agreed for this financial year are only available to the project in this financial year.

If you anticipate a significant underspend because of justifiable changes within the project, please submit a rebudget Change Request as soon as possible. There is no guarantee that Defra will agree a rebudget so please ensure you have enough time to make appropriate changes if necessary.

4. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?
I am delighted with the performance of our team, our relationship with the local Baka population and always with the commitment and support of ZyL to our project.

If you were asked to provide a response to this year's annual report review with your next half year report, please attach your response to this document. Additionally, if you were funded under R24 and asked to provide further information by your first half year report, please attach your response as a separate document.

Please note: Any planned modifications to your project schedule/workplan can be discussed in this report but should also be raised with LTS International through a Change Request.

Please send your **completed report by email** to Eilidh Young at Darwin-Projects@ltsi.co.uk . The report should be between 2-3 pages maximum. **Please state your project reference number in the header of your email message e.g. Subject: 22-035 Darwin Half Year Report**