

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	Pierre Armand Mvogo-Ndongo
Project title	Comparative study of populations of mangrove crabs from six mangrove ecosystems in Cameroon: Implications for Conservation
RSG reference	17672-1
Reporting period	11-05-2015 11-05-2016
Amount of grant	£ 4639
Your email address	mpierrearmand@yahoo.fr
Date of this report	20-05-2016

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
<p>To carry out a biodiversity inventory of Cameroon's mangrove crabs at six locations: Campo, Eboundja, Grand Batanga-Lobe, Mougko, Tiko and Limbe;</p>			✓	<p>The specimens normally collected from the established transects have been identified by my own experience and from distance assistance or help by Late. Prof. Dr. Micheal Tuerkay (Germany).</p> <p>The results are as follows:</p> <p>In total, 12 species of mangrove crabs have been reported during this pilot project. The distribution of these species is greatly unequal at the target localities: Campo (12 species), Eboundja (4 species), Grand-Batanga – Lobé (3 species), Mouanko (7 species), Tiko (10 species) and Limbé (7 species).</p> <p>See the progress report for the 12 species found.</p> <p>The mangrove crab <i>Sesarma buettikoferi</i> occurs in all the studied localities. This species appears to be important as an indicator of recent mangrove destruction by human activities. <i>Metopograpsus curvatus</i> is an indicator species in areas that are heavily polluted. Populations of tree-climbing crabs (<i>Armasas elegans</i>) are particularly affected by human tree-cutting activities.</p>
<p>To assess human-caused damage and pollution to the mangrove forest</p>			✓	<p>The results have been normally reported from the established transects. By the help from local communities, few data were reported from areas outside of our transects.</p> <p>The estimated % degree of pollution in the mangroves from each target locality is given as a percentage. Eboundja, Mouanko, and Tiko are the most polluted zones (80%) where</p>

				<p>the forests are heavily degraded.</p> <p>The number of huts or houses built in the mangroves is higher at Eboundja (40), Mouanko (68) and Tiko (80) than in other localities.</p>
To educate local people			✓	<p>Local populations, especially individuals encountered in the field cutting mangrove forests or throwing garbage into the water, have been made aware of the consequences of their activities and of the negative impacts that they are having on the mangroves. Destruction will increase if they do not slow down their activities. Traditional authorities and administrators (Village Chief, his Assistants, and some Sub-Prefects) have also been informed about the many benefits to them of intact mangrove forest ecosystems.</p>

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

Attendance was low for the special educational workshops that we offered at each locality. However, but we made a point of explaining the negative effects of destroying the mangroves and the positive effects of conserving them to local people we encountered when we were collecting data during the fieldwork.

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

I) Identification of several species of mangrove crabs and the establishment of their roles as indicator species in areas that are heavily polluted and damaged. For example, the presence of *Sesarma buettikoferi* appears to make this species an important indicator of recent mangrove destruction by human activities, while the absence of *Metopograpsus curvatus* is an indicator of areas that are heavily polluted. Populations of the tree-climbing mangrove crab (*Armasas elegans*) are particularly affected by human tree cutting activities. This species prefers to live on young trees and is rarely found on old trees, and we found that this species was absent from our surveys in areas where humans have cut down young trees.

II) Local people encountered in the field were educated on: (1) the importance of mangroves both as nurseries for the species of commercial fish and shellfish that support the livelihoods of the local communities, and as a protective barrier against floods and tsunamis; (2) the threats to the mangrove ecosystem and how to mitigate the impact of these threats and allow mangroves to regenerate; (3) the methodologies needed to collect routine monitoring data on the health of the

ecosystem and its organisms; (4) the need to conserve endangered mangrove species and the steps that need to be taken to protect them from extinction.

III) Important links have been established with local traditional and administrative authorities as well as with some structures and researchers from University of Giessen, (Germany) and at the museum fur Naturkunde, Berlin (Germany). These important links are helping in dispatching results of my work on behalf of the conservation of mangrove and wetland ecosystems in Cameroon.

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

Local teams helped us by providing information on the best targets for educational activities aiming at sensibilise the local population towards the risks following mangrove destruction. For example, the Chief of each locality informed us about the places where we would find the most farmers that were cutting down the mangrove forest. They also have helped us getting data (crab specimens, number of huts and mangrove cutting etc.) from areas outside of our transects.

Local communities have been made to understand the urgency and necessity to maintain a healthy ecosystem, providing a first benefit for local communities. Furthermore, some of those local communities have been established by the Cameroon Government to join (furnishing necessary information) researchers from the state universities in the field. There is thus government support available now. We have normally paid our local guides.

I can also add that the University of Yaounde provided us with the permits to carry out the field work, an equipped laboratory, and support for the chemicals that we used to evaluate water pollution. The University of Yaounde also benefits from this project, because all the data generated here are added to a larger dataset maintained at the university.

5. Are there any plans to continue this work?

Yes. The long-term plan is to gather enough information for it to be useful in devising conservation strategies that will protect Cameroon's important mangrove and wetland ecosystems and their fauna. The current project gathers data from only six localities in Cameroon's mangrove forests. The next step will be to evaluate the health of the adjacent wetlands and freshwater ecosystems and to assess the conservation status of the populations of freshwater crabs and shrimps living there, and to understand the threats that they face to their long-term survival.

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

The results of this project will be presented at the national level in Cameroon (Bioscience, seminars, etc.) and at other international meetings of The Crustacean Society, British Ecological Society. I'm the active member of these organisations. I have discussed my findings other researchers interested

in mangrove crabs and the conservation of mangrove ecosystems around the world during two month-long research visits to Germany (November 2015, and February, 2016) supported by the co-participants of the project (Dr Thomas von Rintelen and Dr Christian Albrecht).

The data generated by this project will be shared with the University of Yaounde and with the Cameroonian National Red Data (the Ministry of Environment and Forest (MINEF), Watershed Task Group (WTG), Center for Biodiversity Conservation (CBC), and the International Union for the Conservation of Nature (IUCN): I will also be active in this operation.

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

Period	Activities	localities	Status
May, 21/2015 – Jun, 4/2015	Field research (rainy season)	Campo (02°20.950' N ; 009°50.556' E)	Achieved
Jun, 5/2015 – Jun, 13/2015	Lab work	University of Yaounde I	Achieved
Jun, 15/2015 – Jun, 30/2015	Field research with pre-educational phase (rainy season)	Eboundja (02°48.023'N; 009°53.628'E)	Achieved
July 1/2015 – July, 9/2015	Lab work with pre-educational phase	University of Yaounde I	Achieved
July, 12/2015 – July, 27/2015	Field research with pre-educational phase (dry season)	Grand-Batanga-Lobé area (02°52.952'N; 00953.733')	Achieved
July 29, 5/2015 – Aug, 6/2015	Lab work	University of Yaounde I	Achieved
Aug, 7/2015 – Aug, 19/2015	Field research with pre-educational phase (dry season)	Moungko area (03°38.078'N ; 009°46.467'E)	Achieved
Aug, 20/2015 – Aug 24/2015,	Lab work	University of Yaounde I	Achieved
Aug 26/2015 – Sept 6/2015	Field research with pre-educational phase (rainy season)	Tiko area (03°98.822'N ; 009°21.661' E)	Achieved
Sept 8/2015 – Sept 20/2015	Labwork	University of Yaounde I	Achieved
Dec 7/2015 – Dec 20/2015	Last field research (dry season)	Limbe area	Achieved
March 2016	Analyze data	University of Yaounde 1	Achieved
April 2016	Talked with some local authorities	Eboundja, Moungko, Tiko.	Achieved

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
Fees payment for field guides	807	750	57	The costs of the guides were as initially budgeted; except for one guide who did not regularly go into the field with us.
Local boat hire	601	601	0	The cost of the boat was as initially budgeted.
Hotel	944	900	44	We found a cheaper hotel than first thought, so some of this is unspent.
Own subsistence	303	300	3	I purchased food with RSG funding during the fieldwork.
Contribution of the subsistence for the two field guides	162	160	2	One guide did not regularly go with us. And sometimes gave something to the person encountered in the field.
Car hire	1202	1202	0	The car was as initially budgeted
Jars for preservation of specimens during field research	50	46	4	Most of the jars were as initially budgeted, but some were cheaper.
Ethanol for preservation of specimens	170	170	0	Ethanol was as initially budgeted
Glycerol for preservation of specimens	100	50	50	Glycerol was less than initially budgeted.
Video camera (Camescope)	300	250	50	I found a cheaper camera.
Some talks: unforeseen expenses (At Tiko, Mouanko and Eboundja) after fieldwork.	-----	210	210	In my original budget, I did not itemise the costs of organising and giving the talks; but economies from elsewhere have covered this.
Total	4639	4639	00	

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

The next step would be to work in the adjacent wetland ecosystems in the lowland rainforest of the coastal region of Cameroon. This will allow comparisons of the populations of freshwater crabs found in wetland ecosystems with the crabs found in mangroves and will also allow the assessment of the conservation status of each species. Future studies are necessary to continue monitoring the health and threats to the mangrove forests and to expand the study to include neighbouring wetland freshwater ecosystems.

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

Yes, I have used the Rufford Foundation logo in my educational materials produced for this project, and will acknowledge the support of the RSGF in all of the resulting publications.

No, RSGF did not receive any direct publicity during the course of the project, other than that stated above.

11. Any other comments?

The project helped to establish important links with traditional and administrative authorities in the studied localities. Dr Thomas von Rintelen (Naturkunde Museum, Berlin, Germany) and Dr Christian Albrecht (University of Giessen, Germany), funded two research trips to Germany (November 2015 and February, 2016) that allowed me to develop skills, better understand how to analyse my data, and assess the progress of my work. During these visits I have occasion to hold productive discussions with other researchers and to plan the next step after the completion of the present project.

In January 2016, I have collected freshwater crabs in wetland ecosystems in Cameroon, from Lake Ossa and from Tiko, using materials inherited from the Rufford Small Grant project. This fieldwork funded by the Congo Basin Grant programme was quite successful, especially because I was able to collect the rare and endangered crab *Louisea edeansis* in Lake Ossa from Southern Cameroon. The last record of this species dates back to 1910 by German researchers and it was since presumed to have been extinct. In the Tiko area, I have collected a new species of *Sudanonautes* which underlines the importance of collecting in these diversity rich areas as well as conservation aspects. The new species lives in very small streams and is thus potentially threatened by human activities. So, the materials from RSGF are helping further of my research here in Cameroon on behalf conservation activities of ecosystem and related species.