

Final Project Evaluation Report

Your Details	
Full Name	Henitsoa Jaonalison
Project Title	Indian Ocean fish biodiversity revealed by traditional Malagasy fisheries (Indofibio)
Application ID	2ac29a-1
Grant Amount	£4994
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Date of this Report	17 august 2018

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
Specimen collection from small scale fishermen using bottom seine on seagrass bed				The specimen collections were accomplished. A total of seven sampling campaigns (one per month) were conducted. A total of 42 samples were collected, and 34,518 individual fish were measured.
Fish photo processing				A total of 456 high definition photos were taken, corresponding to 456 fish fin samples for DNA Barcoding analyses.
Fish fin samples (tissues) sent to France for DNA barcoding analyses				190 fin samples were barcoded. We still have more than 250 samples that remain to be analysed.
Publication of Scientific paper				The team is currently on the point of completing the analyses of a part of the data and will go through scientific paper writing which should be submitted by the end of this year (2018).
Workshops organized in the local community village				Only one workshop for explaining the research project was conducted with the local communities. We are waiting for the completion of data analysis before sharing our findings to the local communities.

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

We encountered two unforeseen difficulties on materials purchasing. (1) our supplier indicated that the stock of GPS used to identify the fishing locations of small-scale fishermen was sold out. We needed to look for another supplier, but the price was much higher. We decided to purchase the expected number of GPS for our project, and the extra-cost was taken in charge by matching funds. (2) The materials ordering, shipping, and the Custom Affairs control took much more time than expected. For not delaying the fieldwork, we decided to launch the fieldwork anyway by borrowing the equipment of our university till the delivery of our materials.

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

- a) 85% of the fishes caught by bottom seine were juveniles (results of Rina Raharinaivo's MSc thesis, part of results of the project);
- b) Important habitats for the vulnerable seahorse species were identified and 87% of captured seahorses were juveniles;
- c) Up to now, we found at least 10 fish species which have never been listed in the checklist of fishes of Madagascar (FRICKE et al., 2018). This list of new fish species for Madagascar will be updated upon completing the DNA analysis of the entire preserved fish fin samples;
- d) We demonstrated that the taxonomic status of 41 species needs to be clarified as their COI sequences indicate that their name may correspond to more than one species.

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

As the project activities were focused on small scale fisheries, the collection of specimens was performed in collaboration with the local community. Two or sometimes four team members were on board with them for monitoring their activities. The project team bought the catches of the fishermen in order to sort out, identify, and take pictures of the specimens in the laboratory.

5. Are there any plans to continue this work?

This present project was just the first step of a more ambitious endeavour: increasing our knowledge about fish biodiversity in Madagascar by using the catches of small scale fisheries. This first project demonstrated that our strategy was adapted. As we still have some fish fin samples to be barcoded, our first aim will be to obtain the COI sequences of these samples in order to be able to analyse in depth all the data we obtained. Our second aim will be to extend our survey to catches from other fishing gears and to continue to survey the catches from bottom seine in Toliara Bay. These additional samples will allow us to overcome some problems we encountered with fish fin tissue preservation (degraded DNA), or DNA extraction (failure rate was higher for Syngnathids for ex.). This will allow us to know the species names of each specimen, or at least its barcoding index number, and thus to get robust findings. We also plan to share the results to the local community first, and for the scientist by attending national and international conferences, and also by publishing papers in indexed international journals. Our ultimate aim is to develop the same sampling strategy and data analyses in other places in Madagascar (for ex. Nosy Be and Sainte-Marie Island, respectively north-western and north eastern Madagascar).

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

The team is currently analysing just a part of the obtained data, and the aim is to write a scientific paper that will be submitted for publication in a peer reviewed journal by the end of this year (2018). We plan to present the results of this study at the 11th Western Indian Ocean Marine Science Association (WIOMSA) Scientific Symposium that will be held in Mauritius from 8th-13th July 2019. Additionally, a workshop will be organised for sharing the result to the local communities on first semester of 2019.

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

The grant was used from September 2017 to August 2018. So, the anticipated length of the project was respected.

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
Lab-work expenses	1350	1722.63	-372.63	This is due to: foreign exchange loss, bank transfer fees, and the number analysed specimen were 190 instead of 180 (due to technical needs).
Fieldwork	2844	2343.58	500.42	To compensate the difference in lab-work and materials expenses, the use budget for fieldwork was limited. Matching funds (from JEAI) was used.
Materials	800	927.91	-127.91	This is due to: foreign exchange loss, bank transfer fees, and delivery fees

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

1. Analyse all the obtained fish fin samples; or conducting additional sampling if needed.

2. Conduct a deep analysis of data for turning the important findings of this project into at least two scientific manuscripts that will be submitted to indexed international journals, and use the results for Jaonalison's and Behivoke's PhD theses.
3. Organise a local workshop for the local communities.
4. Present the obtained results at the 11th WIOMSA Scientific Symposium that will be held in Mauritius from 8-13 July 2019.
5. From end of 2019 on:
 - a. extend our survey, and apply the same strategy (HD pictures + barcoding) to catches from other fishing gears + bottom seine in Toliara Bay;
 - b. apply the same sampling strategy and data analyses to other places in Madagascar (for ex. Nosy Be and Sainte-Marie Island, restively north-western and north eastern Madagascar).

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?

Parts of the project result were presented as a poster during the 10th Western Indian Ocean Marine Science Association (WIOMSA) Scientific Symposium in November 2017.

This conference was held in Dar es Salaam, in Tanzania. The Rufford Foundation logo was used on this poster (cf. figure 4, page3 in the latest update)

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

Names	Role
Fiandria Duphrehino	Field assistant
Jean Jacques Marcellin	Field assistant and lab technician
Rina Raharinaivo	Research assistant, scuba diver
Helga Berjulie Ravelohasina	Research assistant
Radonirina Lebely	Scuba diver (habitat survey)
José Randrianandrasana	Scuba diver (habitat survey)
Richard Andriamanjato Razakandrainy	Scuba diver (habitat survey)
Faustinato Behivoke	Data analysis, writing scientific paper
Henitsoa Jaonalison	Project leader, photo processing, DNA sequences analysis, data analysis, writing scientific paper, scientific communication, final report write-up

12. Any other comments?

The project team addresses its sincere acknowledgement to Rufford foundation for supporting this work. As we expect to launch a more ambitious project in the second part of 2019 in order to continue the present work, we look forward for Rufford foundation's support. A 2nd Small Grant Award will be instrumental for increasing our knowledge about Indian Ocean fish biodiversity.

Reference cited:

FRICKE, R., MAHAFINA, J., **BEHIVOKE, F., JAONALISON, H.**, & LÉOPOLD, M. (2018)
Annotated checklist of the fishes of Madagascar, southwestern Indian Ocean, with
158 new records. *FishTaxa*, Vol.3, 432.
(<http://www.fishtaxa.com/index.php/ft/article/view/3-1>)

