Final Project Evaluation Report

Your Details	
Full Name	Rasoloariniaina Jean Robertin
Project Title	Endemic fish species diagnostic in Lake Itasy catchment area - towards a conservation strategy
Application ID	25051-1
Grant Amount	£5000
Email Address	ratsim17@gmail.com
Date of this Report	2019.07.01

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
Assess the freshwater ecosystem and the freshwater fish in Lake Itasy watersheds				These analyses were performed in collaboration with RANDRIANTIANA Rolland and RANDRIAMORA Nasolo Diary Nandrianina, two students at the Institut d'Enseignement Supérieur d'Antsirabe-Vakinankaratra that I have supervised for their Bachelor. Deeper analysis and publication works will also be done with this data. A total of six lakes and five rivers were sampled for water quality (pH, electrical conductivity, hardness, temperature, dissolved oxygen, carbon dioxide, nitrite, nitrate ammonium, phosphorus, and iron), fish communities (16 species assessed), macroinvertebrates (35 taxa assessed) and plankton (ongoing identification). An oral presentation on the basis of the collected data is already accepted for the ATBC conference 2019. Moreover, two papers for international journals are in preparation.
Study of the fishery				These analyses were performed in collaboration with two other students that I supervise. Some of the analyses were integrated into the Bachelor of RAHERINOTAHIANA Mahaimanampisoa, from the Institut d'Enseinement Superieur Soavinandriana-Itasy. The others will be included in the master's thesis of RAJAONARIVELO Radolalaina, a student at the Institut d'Enseignement Supérieur d'Antsirabe-Vakinankaratra. 40 interviews of fishermen and 40 interviews of fish farmers have been

				conducted.
Assesses the socio-economic dimension of the fishery and the fish conservation				Semi-structured interview were performed with 40 households. Moreover, focus groups with stakeholders were performed. The stakeholders comprised the mayor of Analavory and Ampefy, the responsible of the Itasy Region, the Regional Director of the Ministry of Fisheries and Fishery Resources, the fishery agent at Ampefy, the member of the fishers associations "Aigle" and "Baraoa", the chief of the 20 visited Fokontany, the responsible of the VISTI platform, the leader of the PROSPRER and the APDRA projects and the fish traders. These data have been collected, a large part of the analysis and publication work still needs to be done.
Education and environmental awareness activities				This activity was focussed on the group discussion with the local fisherman. It consists to explain the importance of the sustainable management of the fish resources and the endemic species preservation. At the end of each fieldwork, an oral presentation was held at the Institut d'Enseignement Superieur Soavinandriana-Itasy. After the presentation of the preliminary result of the project, the discussion with the students, their professor, and the stakeholders were performed at the local university. It is focussed on the conservation of the endemic fish fauna. More environmental awareness still needs to be done (e.g. poster, film, awareness at the primary school…)

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

The use of record books was cancelled after the 1st month's experiments, most of the fishermen are illiterate and the result was inaccurate. Instead of this, the data was collected by our students.

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

a) Under my supervision, three bachelor's theses were completed within this project. We are currently writing simple papers related to these theses. One more bachelor's thesis and one master's thesis are still in preparation. We are analysing the additional data collected during the project fieldwork and we plan to submit two more papers later.

b) Some useful information was collected about the threatened fish species (*Ptycochromoides itasy*, *Paratilapia* sp. and *Ratsirakia* sp.). These data concern the biology, the ecology, the distribution and the habitat quality of these species. During the present project *Ptycochromoides itasy* was caught only in the Mahajilo River. However, in November 2017, the local people has caught five specimens of this species in Kotombolo River, at about 20 km northwest of Lake Itasy.

c) Data concerning the socio-economic aspect of the fish and the fishery was collected. It is very important for the decision making and resource management.

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

We involved the local communities in all steps of the fieldwork. First of all, we introduced our project to the local authorities (the Regional Director of the Ministry of Fisheries and Fishery Resources, the Chief of the Region, the Mayor and the Chief of the Fokontany). In the field, participatory and extractive methods were used for this project. The discussion with the stakeholders has permitted to get their point of view about the degradation of fish production and their proposed solution to this problem.

The fish sampling was performed in collaboration with the local fishers. For each study site, we hired two local fishers to fish with us. Moreover, the fishers' catches were considered in this study. With the local community, the fishers constitute the resource person for the fishery and the socio-economic data collections. Individual interviews and the focus groups methods were used for the socio-economic studies. Local cooks were always hired in the villages close to the investigated water. Moreover, we have involved in this project one bachelor student, one assistant student and two teachers from the local university (Institut d'Enseignement Superieur Soavinandriana-Itasy). We stayed and ate at local hotels and restaurants.

Through the investigation of the water quality, we have explained to the local fishers the risk of water pollution to human health and its importance in fish conservation. The collected data on the fishery, the fish farming, and the socio-economic issues will help the stakeholders for decision making for sustainable management of the aquatic resources and the of the human livelihood enhancement.

5. Are there any plans to continue this work?

Our research is the first step of a long-term project which will have several applications in the conservation of three endemic fish species as well as human well-being. There are therefore plans to continue this work at different time scales.

During the next semester, we will try to finalise data analysis, thesis writing and paper publications from the data gathered during this project. In parallel, we will promote our research results in different meetings and workshops. Besides, we have already sent abroad our genetic samples for analyse.

We plan to develop a conservation project for the Mahajilo River, where *P. itasy* is still present. Together with two students (PhD and master) and the local community, we plan to implement a captive breeding program for *Ptychochromoides* itasy and *Paratilapia* sp. In parallel, we plan to restore the Lake Andranomena and the Lake Ilempona watersheds in order to prepare a future endemic species reintroduction. It consists of planting trees and other vegetation in order to manage the invasive species and to bring back the original habitat.

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

At the end of the fieldwork, we have shared the preliminary results of our work with the local stakeholders (Ministry of the Fishery, Region, Town, Fokontany, fisher's associations) through group discussions. Moreover, we will prepare a technical document for the Ministry of Fishery. Besides, we gave oral presentations at the Antsirabe and Soavinandriana Universities.

Three (3) students have already presented their license briefs:

- **RANDRIAMORA N D.** 2019. Etude comparative de la qualité des eaux naturelles entre le milieu rural et le milieu urbain : cas de la Region Itasy et de la ville d'Antsirabe. License brief. Institut d'Enseignement Supérieur d'Antsirabe- Vakinankaratra. University of Antananarivo.
- **RANDRIANTIANA R.** 2019. Inventaire piscicole des bassins du lac itasy:pour une gestion durable des ressources. License brief. Institut d'Enseignement Supérieur d'Antsirabe- Vakinankaratra. University of Antananarivo.
- **RAHERINOTAHIANA M.** 2019. Analyse des parties prenantes impliquées dans la gestion de la pêche dans la Région Itasy, vers une gestion durable des ressources piscicoles. License brief. Institut d'Enseignement Supérieur de Soavinandriana-Itasy. University of Antananarivo.

One license brief and one master's thesis are still in preparation.

We will present an oral presentation of our result during the Madagascar ATBC conference 2019, and this year we plan to publish two articles on aquatic macroinvertebrates and fish ecology.

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

We had received the Rufford Foundation grant on April 2018 and used it from June 2018 to June 2019. There is a 2-month shift from what was originally planned (May 2018 to May 2019). The project manager (Dr Rasoloariniaina) was still in Belgium until May 2018.

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
Materials :				
1. Fishing gear	120	150	+30	We did not find any vendors of fishing gear already manufactured. They were made by craftsmen. This has increased the price from our estimates.
2. Lab and scientific materials	191	236	+45	We have opted for other brands of water testing kits, more expensive than the one we planned in the budget.
3. Office supplies	120	120		We have purchased the equipment in the budget.
4. Costs of print or web publication	75		-75	We have not submitted papers yet.
Travel Costs :				
3. Car rental	1500	1500		The travel costs have not changed. We respected the 30 days of field-work. Moreover, we drove further than expected, the budget allowed it.
4. Fuel	254	254		
5. Transportation fee during the fishery data collection and the environment awareness	60	60		
Personnel :				
6. Food allowance	1060	1060		The participants are as many as the number planned by the project (5 peoples for the survey and 2 peoples for the fishery study). As a result, the budget was respected.
7. Accommodation	1280	1280		
8. Allowance for reunion participants	80	80		
9. Remuneration for field assistants	260	260		
Total	**5000**	**5000**		**1 £ = 4537 Ar**

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

On the first hand, we would like to continue surveying aquatic habitat and assessing fish community distribution and abundance in the Lake Itasy watershed. Meanwhile, we will continue organising awareness-raising activities among fishers, schoolchildren, and students.

On the other hand, we plan to develop a research and conservation project in the Itasy watershed. This project will focus specifically on Mahajilo River, Andranomena Lake, and Ilempona Lake. From the bio-ecological and socio-economical gathered data, we will implement integrative management of the watershed in collaboration with the local community and the fisher's associations. Our target is to lead an in situ conservation of (*Ptychochromoides itasy* and *Paratilapia* sp.). To achieve this goal, we will conduct genetic studies, endemic fish breeding, and aquatic habitat restoration.

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 RF logo has been and will be used in posters, slides, reports, papers, and awareness raising activities. The Rufford Foundation received publicity during the course of our work.

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

This project members were:

Dr. Rasoloariniaina Jean Robertin (Institut d'Enseignement Supérieur d'Antsirabe-Vakinankaratra). Managed the project (Project Coordinator).

Dr. Randriamanarivo Jean Romuald (Centre National de Recherche sur l'Environnement). Managed, implemented, advised, trained surdents.

Dr. Andriaharimalala Tahiana (Centre National de Recherche sur l'Environnement). Managed, collected data, implemented, advised, trained students.

Mr. Andriamialitina Jean Elison (Institut d'Enseignement Supérieur Soavinandriana-Itasy). Managed, collected data, implemented, advised linked the project with local authorities, communities and NGOs.

Dr. Rabeantoandro Zoelisoa (Institut d'Enseignement Supérieur Soavinandriana-Itasy). Collected data, implemented, advised, trained students.

Mr. Randriantiana Rolland (Institut d'Enseignement Supérieur d'Antsirabe-Vakinankaratra). Bachelor student on fish ecology.

Ms. Randriamora Nasolo Diary Nandrianina (Institut d'Enseignement Supérieur d'Antsirabe - Vakinankaratra). Bachelor student on water quality and macroinvertebrates.

Mr. Rakotoarimanga Mahefasoa Christian (Institut d'Enseignement Supérieur Soavinandriana - Itasy). Bachelor student on socio-economic aspects of fish and fishery.

Mr. Raherinotahiana Mahaimanampisoa (Institut d'Enseignement Supérieur Soavinandriana - Itasy). Bachelor student on socio-economic aspects of fish and fishery.

Mr. Rajaonarivelo Mahefatiana Rado (Institut d'Enseignement Supérieur Soavinandriana - Itasy). Master student on socio-economic aspects of fish and fishery.