

Final Evaluation Report

Your Details					
Full Name	Erasme Uyizeye				
Project Title	Developing a Dragonfly Biotic Index and Applying it to Prioritizing Restoration Sites within the Congo-Nile Crest watershed in Rwanda				
Application ID	20593-1				
Grant Amount	£4890				
Email Address	euyizeye@antioch.edu				
Date of this Report	May 26, 2019				



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
Countrywide survey of odonate (dragonfly and damselfly) species and developing a dragonfly biotic index				The analysis is ongoing to finalise the dragonfly biotic index.
Determining areas of restoration priority				Recommendations were made for habitats that need special protection. The project also suggests areas where protected areas need to be expanded.
Platform for insects and freshwater habitat conservation				More work is needed in this capacity. This includes community engagement and citizen science.
Training local researchers				A couple of recent graduates from University of Rwanda have been trained before during the field data collection. Those trained will further be part of the leading team of community engagement and citizen science. However, a validation and training workshop meant to bring together environmental stakeholders, particularly ecologists, entomologist is yet to be held. It will be held in October 2019

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

Unpredictable Weather

Although getting up in a good weather was an accurate predictor of a successful day, the fast weather change was both a challenge and an opportunity. Species detection is usually optimum in sunny, dry and warm weather. Some days we would be in the field and have to run to our car as the rain suddenly poured down. However, due to fast changes in weather, we would not drive back to the camp, but rather we would wait for good weather to return, which eventually worked.

Seasonality consideration in data collection

The seasonality is one of the major factors affecting the quality of data collection, especially when it comes to odonates. The present climate change is making season



prediction difficult. My original plan was to start with a drier rather than a wet season. However, the inaccuracy in season and weather prediction has affected the starting time of this project. This is because the idea was to ensure the collected data are complete and representative of not only all ecological zones of the country but also seasons.

Technical problems

For example, the car got stuck. One day, late in the afternoon, in the middle of nowhere, we were scouting the terrain to find a good site for the next day when our car got a flat tyre. This was only our second day in the field. None of us had changed a tyre before. My experience assisting with previous incidences was not enough. Lucky us! A car came by, driven by two soldiers heading to a nearby camp. The two soldiers could tell that we did not know what to do, stopped and helped to replace the tyre. We are grateful to their help. A lesson was learned: prepare for the unexpected.

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

After Kipping et al. (2017) described the new species, Pseudagrion kamiranzovu, as а flagship species for freshwater ecosystems in Rwanda, my collaborators and I undertook an in-depth study of odonata distribution in Rwanda. This consists of a countrywide survey of odonata species across all ecological zones. Most important outcome included a complete species list ready to be incorporated into monitoring index, pointing out habitats that need special conservation efforts due to endemic and rare species and ecosystems functioning and services and habitats that need restoration.



Our countrywide survey has added 12 species of odonata to the existing national list, increasing the total to 101 species. The most interesting findings included four species that have been found to be strictly associated with relatively undisturbed wetlands. These are two endemic species to Nyungwe National Park recorded in the Kamiranzovu wetland: *Neodythemis nyungwe* and *Pseudagrion kamiranzovu*. *Diplacodes Pumila* was only found in the pristine side of Rugezi wetland, a wetland designated to be of international importance, Ramsar site. *Agriocnemis palaeforma,* a globally threatened species, was found in papyrus wetlands along Akagera River. These highlight the need of special conservation attention on these habitats.

A preliminary scoring system for the Rwanda odonata-based biotic index is now available. In order to get the final odonata-based index for monitoring and assessment habitats in Rwanda, a second countrywide field visit will soon be conducted. This will provide complete data for the distribution sub-index for odonata, and then be merged with the species sensitivity and IUCN red list subindices.



This study has revealed that some the protected areas boundaries have been set in the ignorance of water resources systems. For example, within the Congo Nile Crest watershed, we investigated the integrity of freshwater catchments in the newly created Gishwati-Mukura National Park. We found that streams are highly impaired and odonate species diversity and richness was low. These reflect a strong impact from outside of the park. Headwaters were found to be farms and cattle Gishwati National Park. In this regard, a few square kilometres expansion of reforestation and protection to cover the whole catchment is recommended. This would suffice to cover the major headwaters.

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

Local community who were hired as field assistants were trained in ecology of odonates and taxonomy. The objective was to build their capacity to be future leaders of community engagement and citizen science projects in Rwanda.

5. Are there any plans to continue this work?

In order to further the recommendations of this work and to make the developed DBI more useful, this work this work will continue through various means. I am planning to launch citizen science for aquatic system monitoring in Rwanda. The ultimate activity to achieve this will include explorative work to test the best way to approach and to implement the citizen science. The pilot project will aim at understanding categories of community that should be involved and the technology needed for these people to be equipped to optimise the effectiveness and efficiency of the work.

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

This work will be shared through formal and informal way. The results will be published in peer reviewed journals in order to reach out to scientific communities. Local stakeholders will be brought together and local journals and newsletters will feature the results.

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

This grant is being used from autumn 2018 to autumn 2019. The work delayed a year due to other logistic requirements that had to be met prior to launching this project. Also, the number of days in field ended up being more than the originally planned.



8. Budget: Provide a breakdown of budgeted versus actual expenditure and the reasons for any differences. All figures should be in \pounds 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
Transportation	£2,550	£2,241	-£309	I was able to find a cheaper transportation
Food	£900	£1,162	+£262	The fieldwork took longer than our original expectation
Lodging	£540	£792	+£252	The number of days were more than planned
Workshop	£900	£900		The workshop will be held the Fall 2019
Total	£4,890	£5,095	+£205	

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

The next steps for the projects include establishing an inclusive citizen science framework for freshwater ecosystems. This would be meant to involvement various categories of communities ranging from lay to educated, and from rural to urban communities.

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?

Yes, the logo was used on the car we used in field. It has also been used in acknowledgement while presenting about my project. The Rufford logo will also be used for publicity during the workshop.

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

- Mr. Erasme Uyizeye, Project Principle Investigator
- Dr. Klaas-Douwe B. Dijkstra, Odonate Taxonomist
- Mr. Thomas Kanyempura, Field assistant
- Mr. Alphonse Nyandwi, Field assistant



12. Any other comments?

I am very grateful for the grant from Rufford Small Grants Programme. This project would not be possible without such a financial support.

Reference

Kipping, J., Günther, A., & **Uyizeye**, E. (2017). Pseudagrion kamiranzovu sp. No v., a new flagship species of damselfly from Rwanda's Nyungwe Forest (Odonata: Coenagrionidae). Odonatologica, 46(3–4), 301–318. https://doi.org/10.5281/zenodo.1040318









