

Final Evaluation Report

Your Details	
Full Name	Manase Elisa Pallangyo
Project Title	Assessing the impact of changes in surface water on the distribution and space use of medium and large mammals in the West Kilimanjaro ecosystem, Tanzania
Application ID	29665-2
Grant Amount	£ 6,000
Email Address	Elisam27@yahoo.com
Date of this Report	15th September 2020

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
Assessment of changes in surface water quality, abundance and seasonality				This objective was achieved according to the project plan.
Assessment of ecological impacts of water abstraction and changes in surface water availability				This objective was achieved according to the project plan.

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

Generally, the project was carried out as planned though there were some unexpected circumstances. For instance, the rainfall began earlier in October than expected affecting accessibility by vehicle to some of the monitoring sites. To overcome this situation, the vehicle transported field crew to the nearest possible locations, and then the crew walked on foot to the study sites. On the other side, the early onset of the rainfall was also considered an opportunity to the project as it facilitated capturing of the wet season data that was not well represented in previous first phase of the project. In addition, emergence of COVID-19 contributed to the delay of the project completion as it interrupted mobility, access to essential services and forced adjustment to new ways of working.

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

By providing data and information on the status of surface water including how much water is available and how much is extracted to serve various human activities particularly in Ngaranyuki and Simba river catchments, this project has made a significant contribution required for promoting an effective water resources governance in the West Kilimanjaro which has largely been hindered by the lack of relevant data. This is probably the first project to specifically focus on the status of water resources in the West Kilimanjaro ecosystem.

The project has elucidated the ecological impacts of surface water changes and extraction on biodiversity which will feed into decision making, planning and management of water and biodiversity resources within the ecosystem and also in other cases facing a similar challenges.

Through involvement of the local communities, and the wildlife authorities during the field work implementation phase, the project has raised a preliminary awareness on the status and role played by surface water for human, livestock and wildlife wellbeing. This is an important aspect for securing support to promote an

ecologically sustainable management of water resources in the West Kilimanjaro ecosystem.

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

The project area largely falls under a community conserved wildlife area, as such the project aims and objectives were clearly communicated to community leaders at village levels and the management of the Enduimet Wildlife Management Area (a wildlife management institution accountable to the local community) at the inception and during implementation of the project. This served as a means of securing local support and also obtaining relevant information about the area and key resources. The local community leaders and the management of the wildlife area were also at various occasions consulted and updated on the progress and findings of the project. All project assistants for the field work were obtained from the local community. In addition, the final report will be shared with the local community through their respective authorities.

5. Are there any plans to continue this work?

Yes, there are plans to continue this project on both science and management aspects. While several key science aspects are already answered by this project, there is a need to extend data collection to adequately capture temporal variations on changes in surface water and consequent changes on biodiversity. It has come clearly now that the scarce surface water resource plays a critical role for human and animal life in the ecosystem. For instance, there is a need to examine healthy and physiological effects of the scarce and poor-quality water on wild animals and livestock in the ecosystem. Also, there is a need to quantify how change in surface water actually affect elephant movements and how this in turn contribute to the escalating human-elephant conflicts in the ecosystem. On the management aspect, there is a need to widely raise awareness of the local authorities and community on the existing changes of surface water conditions, and the related effects on human, livestock and biodiversity, and then involve the community to develop and reach consensus on the realistic solutions to be implemented to improve water resources management in the ecosystem. The findings of this project provide the basis for the initiation of improved management of water and biodiversity resources in the West Kilimanjaro ecosystem.

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

The findings of this project will mainly be shared through reports and presentations to be delivered to the local community and wildlife authorities in the West Kilimanjaro ecosystem. The key stakeholders will be village and ward leaders, management of the Enduimet Wildlife Management Area, Arusha and Kilimanjaro National Parks, Water basin authorities, and also the district councils of Longido, Siha and Meru which have a share in this ecosystem. I also plan to prepare peer reviewed scientific articles that will be published in scientific journals where they will be accessible to a wider audience.

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

The project spanned over a period of almost 10 months which is beyond what was anticipated, for instance while the field work was expected to be completed over a period of 5 months, it had to be completed over a period of 8 months. Data analysis and report writing was also hindered by lack of access to essential services such as library and laboratory services. All this delay was caused by unexpected interruption from the COVID-19.

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
Hiring of field vehicle	2800	3000	+200	4x4 vehicle hired for field transport
Payment of 1 ranger	700	1000	+300	Escort ranger ensured security against the dangerous wild animals
Payment of 1 field assistant	1800	1000	-800	Field assistant assisted the lead researcher in data collection
Acquisition of past hydrological data	300	526	+248	Payment for acquisition of past data. Extra £26 was incurred to pay for the sufficient amount of data deemed necessary
Lab analysis for fluoride and nutrients	400	474	+747	Payment for the cost of lab analysis. The amount spent adequately covered the required sample analysis, and therefore the remainder was used to cover extra costs in the acquisition of past hydrological data
TOTAL	6000	6000		Average exchange rate used was £1= Tsh 2850/-

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

This project has achieved a milestone towards establishment of an effective management of water and biodiversity resources in the West Kilimanjaro ecosystem. However, while this is a great step, there is still a need to advance the project

addressing both science and management aspects that have been and/or not covered in this project. For, instance there is a need to examine healthy and physiological effects of the scarce and poor-quality water on wild animals and livestock in the ecosystem. Also, there is a need to quantify how changes in surface water actually affect elephant movements and how that contribute to the escalating human-elephant conflicts in the ecosystem. We also need to extend data collection to adequately and consistently capture temporal and spatial dynamics of water and biodiversity resources in the face of rapidly changing climate, human population and activities in the ecosystem. On the management aspect, there is a need to widely raise awareness of the local authorities and community on the existing changes water conditions, and the related effects on human and biodiversity, and then develop realistic solutions and ensure there are strong local institutions for effective governance and management of water resources and biodiversity in the ecosystem.

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?

So far, no material from this project has been published, but when published, The Rufford Foundation will be acknowledged and where appropriate Rufford logo will also be used.

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

Elisa Manase was the project leader

Prof. Susanne Shultz, Prof. Keith White and **Prof. Eric Wolanski** guided and supervised the project leader in designing and implementing the project.

Ezekiel Said served as an accompanying field assistant during data collection period and **Saitoti Lembalai** as an escort ranger during the field work.

James Pallangyo assisted in reading the water level gauge in Ngarenanyuki River

Peter Manda assisted in reading the evaporation and rainfall gauge in Lake Chala

12. Any other comments?

Generally, this project has been a success, and I would like to sincerely thank the The Rufford Foundation for supporting this project, which is important for the sustainable management of water and biodiversity resources in the West Kilimanjaro ecosystem. The project is also important for advancing my career.