

## The Rufford Foundation

### Final Report

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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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

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#### Grant Recipient Details

<b>Your name</b>	Mugabe Robert
<b>Project title</b>	The diversity and regeneration status of trees in abandoned mined sites within Nyungwe National Park, south-western Rwanda
<b>RSG reference</b>	21121-1
<b>Reporting period</b>	May 2017-June 2018
<b>Amount of grant</b>	£4987
<b>Your email address</b>	mugabero2002@yahoo.co.uk
<b>Date of this report</b>	5 <sup>th</sup> /June/2018

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
Determine the composition and diversity of trees in abandoned mined sites in Nyungwe National Park				74 plots of 25 x 30 m were established in selected abandoned mining sites that fall within the time frame of abandonment and control sites (unmined forest sites) that acted as baseline. These plots were nested to assess small size classes. All trees, poles, saplings and seedlings in abandoned mining and unmined sites were identified and measured and recorded.
Determine the regeneration status and population structure of trees in abandoned mined sites.				DBH data of all size classes (i.e. seedling, saplings, poles and trees) were collected per plot both in mined and unmined sites. Ground vegetation cover was also estimated per plot in the plots surveyed.
Determine the most critical environmental factors that influence tree species diversity and composition in mined sites				Data on environmental variables (canopy cover, ground cover, altitude, aspect, and slope) within the plots were collected and also soil samples (five cores per plot obtained from four corners and one from the centre) in each plot were collected. I am currently analysing these data and afterwards will start writing my dissertation which will be shared to you in the near future.
Sensitization of the community based conservation education officers on the impacts of mining on Nyungwe National Park ecological and watershed values				This did not happen because I had not budgeted for it properly. I initially thought that I would use the community conservation department resources. However it did not go as planned. It will be taken care of in the next projects.

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

Some of the challenges encountered while conducting field work included a rugged terrain (mountainous) which made it difficult to access our study sites and conducting field work in a rain season. This also influenced other parameters that were going to be measured in the field (e.g. soil moisture). We managed to overcome some of these challenges.

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

- ✓ Baseline data on tree species composition, diversity, population structure of trees and regeneration status in abandoned mining sites within the forest has been generated. This information will be very useful in designing of future restoration strategies for abandoned mining sites.
- ✓ Since the coordinates of the study sites were captured during field work, these sites have been mapped and will continue to be monitored by the research department of the park to assess ecological changes taking place in them. These coordinates will also be used during the implementation of assisted natural regeneration in mining sites.
- ✓ A master's thesis is yet to be produced from this work.

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

Most of the members that comprised my team are part of the local community. Two of my research field assistants, the cook, potter, and trail cutter, all are members of the park frontline community. The two field assistants learnt new skills in field and benefitted in terms of getting salaries whereas the cook, potters and the trail cutter and guide benefitted in terms of getting salaries for their services during field work.

**5. Are there any plans to continue this work?**

With the funding from Rufford Foundation, I plan to assess the recovery of burnt sites within the forest that were colonized by ferns and later benefited from assisted natural regeneration. This will give us the required baseline information that will be used in applying the same interventions in abandoned mining sites. I also intend to pursue a PhD that will focus mainly on designing restoration strategies that promote plant regeneration and the survival of fauna in abandoned mining sites within NNP. This study will lead to the collection of long term data that will be used for monitoring purposes for abandoned mining sites.

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

- ✓ Since assessing forest recovery in abandoned mining sites is one the priority areas for research in the 10-year national park's management plan. The

findings from this study will be very critical in informing management decisions such as designing proper restoration strategies for abandoned mined sites within the Park. As such, I intend to present the findings to the Nyungwe National Park managers and WCS's Nyungwe Forest conservation project research team so that decisions regarding designing restoration strategies can be thought about.

- ✓ Since I am also an alumnus of the Tropical Biology Association (TBA), I plan to present my results in next year's student conference on conservation science (SCCS) that is co-organised by TBA which will take place at the University of Cambridge.
- ✓ My results will also be presented at the School of Forestry, Environmental and Geographical sciences, Makerere University for the partial fulfilment for the award of an MSc in Forestry and Nature conservation of Makerere University.
- ✓ Finally, I plan to present the results of my work in the research symposium that gathers research projects conducted in and around Rwanda National Parks that is annually organised by RDB's Conservation Department and the Center of Excellence in Biodiversity and Natural Resource Management (CoEB) of the National University of Rwanda.

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

The project was supposed to have begun in March 2017 and last for 10 month. However, due to other unforeseen reasons (such the delay in receiving the funds, acquiring the research permit, and the tight schedule of my research assistants) the project started in May 2017. Nevertheless, the implementation of the project took 1 year.

**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
Research Permit	58	58	0	
Field equipment costs (GPS and Camera batteries, Pressing papers and presses, camping tents, Digital Camera Nikon, guide book, note books, diameter tapes, and GPS)	755	749	6	

Field work costs (Transport, Feeding, Allowances, Porters)	3124	3002	122	The £122 was saved from the porters salary. It was also added on the soil analysis costs.
Soil analysis costs (16 Samples)	480	1184	-704	Initially each sample analysis was budgeted at 30£ but the actual amount was 16£. However, we collected 74 soil samples.
Community based conservation education training (Venue, allowances, training materials)	245	0	245	This did not happen because of the initial budget that was not sufficient to cater for the training. This amount was added to the soil analysis costs.
Other costs (unknown species identification, Printing costs)	325	275	50	
Extra cost				The amount saved from various items i.e. (423£) was added on the soil analysis costs. I also had to add extra amount totalling to 281£

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

My next step is to engage the park management and other conservation stakeholders (such as WCS) and we come up with restoration strategies that can promote regeneration of trees in some of these sites where regeneration has been observed to be slow or totally arrested as a result of the initial colonisers of disturbed sites in the forest (ferns and other herbs). Similar interventions (assisted natural regeneration in burnt sites that were invaded by *Pteridium aquilinum*) were applied in burnt sites within the forest and the results are promising. This could be replicated also in abandoned mining sites. I also intend to carry out another study on the success of assisted regeneration in forest burnt sites such that the information generated could be used as a baseline for applying the same strategy in aiding regeneration in abandoned mining sites.

### 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?

I haven't used the logo yet because I have not produced any material related to the project but I intend to present my preliminary findings (that will bear the Rufford Foundation Logo) to the park management and WCS research team. However, the RF received publicity when I was applying for the research permit from the conservation department of Rwanda Development Board. Furthermore, RF received publicity during the Tropical Biology Association Field course I attended in 2017 in the

East Usambara Mountains in Tanzania. On the course, I used to tell other fellow course mates about funding of conservation projects by Rufford.

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

**Anselme Abaliho** (Botanist)

Anselme graduated from the National University of Rwanda with a degree in conservation biology majoring in Botany last year. He is experienced in assisting researchers conducting research in protected areas in Rwanda. He has been my assistant during field work and could coordinate the team in case of my absence.

**Gakima John Baptist** (Botanist):

Gakima is botanist based in Nyungwe National Park. He works for Nyungwe Forest Conservation Project under the Wildlife Conservation Society. He has worked for over 30 years in Nyungwe assisting researchers conducting research on plant ecology. On this project he has been an assistant in conducting field work mainly in plant identification and plots establishment.

**Nzakizwanayo Eraste:**

Eraste has been a field botanist for over 20 years working for Wildlife conservation Society field project in Nyungwe National Park. He was part of my team assisting in plant identification and other field methods.

Other support personnel who were part of the project included: **Vladimir** who was in charge of cooking and washing clothes, we also had **Thomas Batumira** who was a guide and porter, **Kayitare** and **Oreste** who were in charge of our security during field work.

**12. Any other comments?**

This study wouldn't have taken place if it wasn't funded by Rufford. We therefore, take this moment to thank the Rufford Foundation for supporting our project and supporting conservation efforts around the world in general.



