

The Rufford Foundation Final Report

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.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details

Your name	Francesco Rovero
Project title	Udzungwa as a model for standardized research and monitoring of biodiversity in Tanzania: completing a long-term capacity building programme
RSG reference	1106-C
Reporting period	December 2015 – January 2017
Amount of grant	UK£ 15,000
Your email address	francesco.rovero@muse.it
Date of this report	3 March 2017

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
Completion of capacity building for ecological monitoring by the UMNP				All planned capacity building was conducted, both through the regular assistance and advisory to the park's Ecology Department and through the dedicated training workshop, held 12th-14th January 2017 that included adoption of TEAM's camera trapping Terrestrial Vertebrate protocol. However, the continued budget constraints by TANAPA especially for ecological monitoring, the frequent change of park staff and the low priority given to ecological monitoring make capacity building constantly and repeatedly needed.
Use the ecological monitoring activities as case study for training and replication at local, national and regional levels				Udzungwa has become a model for ecological monitoring in the country and the closing workshop adds to the one held in 2013 in contributing replicating the protocols adopted in Udzungwa at national level. By facilitating the application of TEAM's camera trapping protocol, the project has posed the conditions for replication at regional level too, given the presence of TEAM sites in bordering countries across east and central Africa.
Completed research on Udzungwa red colobus has generated a comprehensive and multi-layer data-set				This research programme has been successfully completed with replication of sampling in the fifth forest and completion of analysis of the overall data-set (see Appended list of papers). This progressively

				incremented research has truly contributed developing novel and integrated approaches to population and meta-population assessments with clear potential and implications.
Scientific results provide the basis for scientifically-sound recommendations on conservation actions which can ensure long-term conservation				Results from our applied research have always been translated into recommendation strategies (site prioritisation, identification of most suitable forest zones for conservation, etc.). Among the most tangible result is the upgrading of the conservation status of southern and least-protected Uzungwa scarp to Nature Reserve.
Public (including local schools) and scientific dissemination of project approach and results				Results were disseminated through meetings, papers, technical reports and, qualitatively, through the routine environmental education programme run by our institution and partners in Udzungwa.

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

This completing phase ran smoothly and without major difficulties. Fieldwork was conducted in some of the most remote forests of the area but it went well. The work in Uzungwa scarp to replicate TEAM's camera trapping protocol was particularly challenging due to the uncontrolled encroachment by poachers, and armed soldiers had to accompany the field team in some occasions. Collaboration with the local partners, namely TANAPA and Tanzania Forest Service, was good, making implementation smooth and productive.

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

1. Scientifically, the integrated primate research programme has significantly boosted our knowledge of primate ecology in one of the single, most important hotspot for primate conservation in the country. This contributed not only the scientific progress but also placing Udzungwa in the map of top priority sites for conservation, with potential, potential cascading effects in the future.
2. Udzungwa has become a model for biodiversity monitoring based on cost-effective tools that can potentially contribute building up nationwide

monitoring strategies and hence contribute measuring progress towards Aichi targets.

3. The programme showed that the combination of high profile research with capacity building for biodiversity monitoring provides the basis for scientifically sound recommendations on conservation actions which can ensure long-term conservation, as shown for example by the recent (2016) upgrading in the protection status of some of the target forests.

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

Most of the staff involved in fieldwork has been from local communities; in addition, we integrated results in environmental education and awareness raising reaching out to 14 village communities to the east of the national park.

5. Are there any plans to continue this work?

Yes, MUSE with partners have established a long-term programme in the area (ongoing since 2004) that will continue operations behind completion of this project. Rufford-funded project has indeed been instrumental to secure funding for additional and related efforts. For example, a private Foundation from Italy has committed funding for three years to continue monitoring and capacity building to the nature reserve staff in Uzungwa scarp forest, and the baseline work conducted through the Rufford-funded programme has certainly been instrumental to this.

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

Scientific papers, popular science papers, website and social media, meetings, workshops and the regular communication among members of the growing network of people and organisation connected to our work.

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 overall period was from December 2015 to January 2017, hence a slightly shorter period than the anticipated length of 18 months. The smooth implementation mentioned above ensured a quicker and more efficient implementation than expected.

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.

The exchange rate of GBP to the Tanzanian Shillings averaged 2700 TSH/£.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Personnel:				
Project field coordinator (A. Mtui), salary contribution	900	990	90	10% increase for inflation had to be added
Project field technician (R. Laizzer)	900	990	90	As above
Project field technician (A. Mwakisoma)	900	990	90	As above
Temporary field assistants (cook, camp logistician, etc.)	750	1.300	550	Unforeseen need for armed soldiers in Uzungwa scarp
Travel and subsistence:				
Use of Trento Museum's/TANAPA 4WD cars	900	1.200	300	60 dd instead of 50 dd planned
Diesel for vehicles	900	1.200	300	4000 km instead of 3000 km planned
Training and field activity costs :				
Workshop for forest park staff	1.200	1.200	0	
Camping costs (supplies, food, etc.)	1.500	1.700	200	Increase in field days and people in the team
Equipment, field material, and office costs:				
Set of boots and uniform for field team	250	250	0	
Camera traps (Reconyx), with locks, cards, batteries	4.800	3.300	-1.500	We bought 11 units instead of 16 planned, as the rest became available from other projects
Compasses, torches and other field material	200	200	0	

Camping gear for field team	700	700	0	
Paper, printing costs, stationary for field and training	100	100	0	
Sub-total	14.000	14.120	120	
Project administration (8%)	1.000	880	-120	
Total	15.000	15.000	0	

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

Ensuring that the programme can indeed have a long-lasting impact will need enduring advisory/support to TANAPA and Tanzania Forest Service, to ensure that monitoring continues to be implemented efficiently, and data and results are correctly interpreted and used. To scaling up the impact at national/regional level will need continued networking with other agencies supporting biodiversity monitoring.

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?

We used/will use the logo in technical reports that will emanate from the project (for example the closing training workshop); RSGF has been/will be acknowledged as donor in all papers on the research conducted as well as any other publication produced (e.g. annual technical reports of the Udzungwa Ecological Monitoring Centre - UEMC, and a decade report of UEMC which is being currently produced both in print and on-line).

11. Any other comments?

A sincere gratitude for funding a programme that progressively contributed, over the years, to make a difference for the conservation of one the world's most important biodiversity hotspots.

Appendix: list of most recent scientific papers

Cavada N, Ciolli M, Rocchini D, Barelli C, Marshall AR, Rovero F (2017). Integrating field and satellite data for spatially-explicit inference on the density of threatened arboreal primates. *Ecological Applications* 27(1): 235–243.

Cavada N, Barelli C, Ciolli M, Rovero F (2016) Primates in Human-Modified and Fragmented Landscapes: The Conservation Relevance of Modelling Habitat and

Disturbance Factors in Density Estimation. PLoS ONE 11(2): e0148289. doi:10.1371/journal.pone.0148289.

Barelli C, Albanese D, Donati C, Pindo M, Dallago C, Rovero F, Cavalieri D, Tuohy KM, Hauffe C, De Filippo C. (2015). Habitat fragmentation is associated to gut microbiota diversity of an endangered primate: implications for conservation. *Scientific reports* 5: 14862 (2015). doi:10.1038/srep14862.

Ting N, Ruiz Lopez MJ, Barelli C, Rovero F, Hodges K, Roos C, Peterman B (2015). A novel landscape genetics approach demonstrates the effects of human disturbance on the Udzungwa red colobus monkey (*Procolobus gordonorum*). *Heredity* doi:10.1038/hdy.2015.82.

Barelli, C., Mundry, R., Araldi, A., Hodges, K., Rocchini, D., & Rovero, F. (2015). Modelling Primate Abundance in Complex Landscapes: A Case Study from the Udzungwa Mountains of Tanzania. *International Journal of Primatology* 36: 209-226.

Barelli, C., Rovero, F., Hodges, K., Araldi, A., & Heistermann, M. (2015). Physiological stress levels in the endemic and endangered Udzungwa red colobus vary with elevation. *African Zoology* 50: 23-30.

Araldi A, Barelli C, Hodges K, Rovero F (2014). Density estimation of the endangered Udzungwa red colobus (*Procolobus gordonorum*) and other arboreal primates in the Udzungwa Mountains using systematic distance sampling. *International Journal of Primatology* 35: 941-956.