

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 | Charles J. Kilawe |
| Project title | The impact of invasive tree species <i>Cedrela odorata</i> on population of critically endangered Lizard species <i>Lygodactylus williamsi</i> at Kimboza Forest Reserve, Tanzania |
| RSG reference | 157440-1 |
| Reporting period | September,2016-March, 2017 |
| Amount of grant | £4998 |
| Your email address | ckilawe@suanet.ac.tz |
| Date of this report | 18 August 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 |
|--|--------------|--------------------|----------------|---|
| <p>Objective one Determination of historical information on the introduction and management of <i>Cedrela odorata</i> at Kimboza Forest Reserve.</p> | | | | <p>We learned that <i>Cedrela odorata</i> was deliberately introduced to Kimboza Forest Reserve in two phases. Trial phase involved planting the tree species in one plot of 2 ha in 1957 and establishment phase followed in 1960, whereby 6 ha of <i>Cedrela</i> were planted.</p> <p>All introductions were engineered by Braser, the then forest owner, with the aim of recruiting fast growing tree species for timber and firewood.</p> |
| <p>Objective two Determination of local communities perception on spread and impacts of <i>Cedrela odorata</i> on biodiversity</p> | | | | <p>Local community perceived that <i>Cedrela odorata</i> was spreading at a very high rate within the forest reserve, public lands and settlements. They claimed that the tree species produce many viable seeds, twice a year. The seeds are light and winged mainly dispersed by wind, water and birds. The seeds are distributed almost everywhere during dry season and would germinate profusely after the rain.</p> <p>Local community perceive <i>Cedrela</i> as a threat to the biodiversity of forest reserve. They claimed that the exotic species was replacing the indigenous fruit and medicinal tree species.</p> |
| <p>Objective three Assessment of the extent of invasion of <i>Cedrela odorata</i> into <i>Pandanus rabaiensis</i> vegetation</p> | | | | <p>Systematic survey revealed that <i>Cedrela</i> covers 35% while <i>Pandanus</i> covers 15% of all tree species with diameter >10 cm. Except, few thick stands of <i>Pandanus</i>, <i>Cedrela</i> was found almost every vegetation type.</p> <p>We found a very strong negative correlation between abundancies of <i>Cedrela</i> and <i>Pandanus</i> suggesting</p> |

| | | | | |
|---|--|--|--|--|
| | | | | that <i>Cedrela</i> could be suppressing /replacing <i>Pandanus</i> . However, other hypothesis could be that the two species are resisting each other. |
| Objective four | | | | There was not sufficient evidence to conclude that <i>C.odorata</i> was affecting in anyway the population of lizard species, <i>L.williamsi</i> . Generally, significant larger populations of <i>Lygodactylus williamsi</i> were found in open canopy trees than dense, regardless of vegetation type. |
| Assessment of the invasion impacts of <i>Cedrela odorata</i> on population of <i>Lygodactylus williamsi</i> | | | | |

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

- i. The forest reserve is very difficult to walk on during ground surveys. There are massive rock boulders reaching up to 7 m high. Also, there are patches of impenetrable bushes and palms. The number days for field survey were increased by five. A few plots (6/126) could not be accessed at all.
- ii. Rainy season this year was rather heavy and longer (February-June). With rains, Kimboza became inaccessible due to infrastructure destruction. The video filming and final workshop which were to be conducted in March were rescheduled to June.

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

Two maps: (1) Spatial distribution map of invasive *Cedrela odorata* showing areas seriously infested and those at an early stage. (2) The map shows the spatial distribution of *Pandanus rabaiensis*, the sole habitat for lizard species *Lygodactylus williamsi*. The two maps are important instruments that can be used by Kimboza Management to manage both the invasive and the indigenous species.

Video documentary. A short video documentary showing the history of the forest reserve, potentials and threats. The video is in Kiswahili with English subtitles. This short video has been shared on YouTube and other social media. It helps to raise awareness to the general public and other people who may not get the chance to read the report/publications. Video can be accessed here: <https://www.youtube.com/watch?v=DoreMmzv3k0>

Awareness creation: This project has created and raised awareness about the presence and value of the Kimboza forest reserve to the local community, national and international level. Three workshops were held over the course of the project: at Kimboza Forest Reserve involving local villagers and the final workshop held at Morogoro involving various

stakeholders at various levels. The presentations were also made to BSC. Forest student and Tropical Biological Association course in Amani (2017 group).

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

- i. Local communities were involved at various stages in the course of implementation of the project activities. Seventeen members from four villages were involved as source of information during focus group discussions and eight members were selected as key informants. Two members of environmental committee were employed as field assistant. They were trained how to assist field survey and identification of the gecko.
- ii. The project supported two undergraduate students to undertake their special project at Kimboza Forest Reserve. The project covered transport, meals and accommodation for eight days.
- iii. Local communities were compensated for their time spent in project activities. Allowances were paid according to Tanzania standards.
- iv. We benefited from the services provided by local communities such as accommodation, food, drinks and transportation.

5. Are there any plans to continue this work?

Yes

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

- Share the video clip in the social media-You tube, Facebook and WhatsApp.
- Publications - At least two papers are expected to be published.
- Participate in to the conference and workshops.
- Share the results with other projects dealing with invasive species in the region. I have developed network and contacts with Woody weed project (<http://woodyweeds.org/>).

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

Rufford Foundation grant was used for 7 months as anticipated.

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 is 1£=3,193 TZS

| Item | Budgeted Amount | Actual Amount | Difference | Comments |
|--|-----------------|---------------|------------|--|
| Permits to conduct research into the forest reserve for 25 days | 16 | 40 | +24 | Additional of 5 days in the field. Each day cost £ 1.6 |
| One first aid Kit | 150 | 150 | 0 | |
| One digital camera (Canon EOS REBEL T6 18-55mm) | 420 | 552 | -132 | Available camera Canon EOS 1200D (with Lens Tamron AF 18-200mm + Camera bag) was a bit expensive |
| One GPS for recording spatial attributes (Garmin Montana 680T Handheld GPS) | 380 | 88 | +292 | GPS Garmin Montana 680T was not available by the start of the project, Instead, Geotag MX-G 10M KM. |
| Two pairs of Binoculars (Bushnell Power View Super High-Powered Surveillance Binoculars 20x magnification and 50mm objective diameter) | 70 | 61 | +9 | The budget was not sufficient for two Bushnell View Super High-Powered Surveillance Binoculars. Instead, one good Nikon Aculon A211 8 X 42 was purchased. |
| Two pair of 30 m tape measure for taking plot dimensions | 63 | 63 | 0 | - |
| Five pairs of rain boots and special clothing for working in a swampy area | 65 | 65 | 0 | - |
| Meals and accommodation for five research team members during inception workshop, field work and feedback workshop, approximately 25 days. | 1992 | 2392 | -400 | -The number of field days increased by five for reasons explained in section 3 . -Some of budget was used to cover accommodation for two undergraduate students as explained in section 4(ii) . |
| Bites and refreshments for actors and stakeholders during inception and feedback workshop | 170 | 170 | 0 | |
| Transportation for the research team and stakeholders during | 752 | 497 | +255 | The final workshop was held in Morogoro, This reduced the transport cost for researchers |

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|---|-------|-------|---|------------------|
| inception workshop, field work and feedback workshop (Mileage charge and fuel cost for approximately 800 kilometers) | | | | and stakeholders |
| Stationaries and a 8 minutes video documentary | 800 | 800 | 0 | - |
| Local facilitation (payment for service provided by local communities such as coo-ordination of the stakeholders, local research permits) | 120 | 120 | 0 | - |
| Total | 4,998 | 4,998 | | |

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

I feel that next step should focus on elevating the protection level of the forest reserve and performing both passive and active restoration

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?

Yes. The logo was used in the video documentary, all power point presentations and reports

11. Any other comments?

1. We noticed fresh cut of *Pandanus rabaiensis* suggesting that illegal trade of *L. williamsii* is still going on.
2. I would like to thank Rufford Foundation for funding my project.