

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	Haile Yineger Tariku
Project title	Habitat fragmentation in NW Ethiopia: effects on pollen-mediated gene flow of endangered medicinal tree, <i>Prunus africana</i>
RSG reference	13950-2
Reporting period	November 2013 to October 2014
Amount of grant	£6000
Your email address	h.tariku@griffith.edu.au ; haile_mulu@yahoo.com
Date of this report	October 29, 2014

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
To evaluate the effects of forest fragmentation on pollen dispersal among remnant populations of an endangered medicinal tree, <i>Prunus africana</i> , in NW Ethiopia		√		DNA extraction, PCR and isolation of fragments from the PCR products are successfully accomplished for all samples. Also, the majority of samples have been successfully genotyped except for a few ones, which still require some more time to score on the GeneMapper software package. I was too busy at finalising my terminal degree while simultaneously running this project. So, I am yet to run statistical analysis of data once all the remaining scoring tasks are accomplished. Fragmentation effects on pollen dispersal will be evaluated after the statistical analysis of genetic data.
To acquire genetic data that will be used to understand the impacts of fragmentation on population connectivity of <i>Prunus africana</i> , in NW Ethiopia			√	A full understanding of population genetic connectivity of the study species requires information on seed and pollen-mediated gene flow of the species. The case of seed-mediated gene flow has already been analysed and will be published very soon in a reputed and peer-reviewed journal. I have also presented this work at the 24 th EUFRO World Congress, which was held from 5 th -11 th October 2014 in Salt Lake City, Utah, USA. In this project, I have obtained data for analysis of pollen-mediated gene flow between remnant populations of <i>Prunus africana</i> , in NW Ethiopia. I will draft the manuscript very soon and submit it for publication in a peer-reviewed journal.
To acquire genetic data that will contribute for the conservation and restoration of forest genetic resources in NW Ethiopia			√	Development of conservation and restoration strategies for the study species and other biodiversity elements in NW Ethiopia require genetic information among others. At this stage, I can confidently tell that sufficient genetic data is available, thanks to the

				financial support from RSGF. It is now possible to employ the genetic and bioclimatic data and species distribution predictive models to understand the past, current and future distribution ranges of <i>Prunus africana</i> in the study system. This along with basic survey of faunal and floral diversity and socio-economic aspects will provide crucial information for the development of conservation and restoration strategies for the degraded landscapes in NW Ethiopia.
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2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

Although I previously optimised PCR conditions particularly based on leaf and cambium samples of *P. africana*, things somehow changed when I tried to apply the same conditions for the seed samples. Attempts to fix this difficulty took much more time than previously thought as I had to run several trial and error experiments. At the same time, I was too busy at finalising my PhD thesis work. This was a very difficult challenge particularly in terms of time management. As a result, I had to work very hard and spend a lot of time in the lab including after office hours and weekend times.

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

- The main outcome of this project was genetic data that will be used to evaluate the impacts of forest fragmentation on the mating system and pollen dispersal of *P. africana* in NW Ethiopia. I will accomplish the remaining few scoring tasks and draft the manuscript shortly. I have now enough time in the next few weeks or months to concentrate on this work.
- A complementary outcome of this project was contribution of genetic data that will be used for a comprehensive understanding of fragmentation impacts on population connectivity of *P. africana* in NW Ethiopia. This is in addition to the seed-mediated gene flow data (paper expected soon) and the population genetics data for the same study species (see our previous paper in BMC Genetics 15:31, 2014).
- The third outcome is genetic data useful for the development of conservation and restoration strategies in NW Ethiopia. This, however, requires other complementary data and will be a focus of future projects.

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

This is not applicable in the current project.

5. Are there any plans to continue this work?

Yes, I have plans to continue this work in collaboration with interested researchers and other stakeholders. Although this and the previous project allowed obtaining sufficient genetic

information to understand the impacts of fragmentation on population connectivity of *P. africana*, it is not known whether the genetic information is biased with some environmental variables such as intensity of logging, vegetation composition and structure and faunal diversity particularly pollinator and dispersal agents. Thus, combining the genetic data with such environmental variables may provide interesting information for management and restoration of the remnant forest patches. So, I am thinking to develop my next proposal on such perspectives.

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

I have plans to share the results of this work through oral or poster presentations at scientific conferences and also through publication in peer-reviewed journals.

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 Rufford Foundation grant was actually used within 1 year, i.e., between November 2013 and October 2014. I was a bit ambitious when planning the original proposal for this project.

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
CTAB extraction cost	1118	1218	+100	Additional cost covered from the miscellaneous expenses budget
PCR running cost	936	1036	+100	Additional cost covered from the miscellaneous expenses budget
Primers (Fwd and Rvs)	312	312	0	As planned
Tubes, tips and plates	845	845	0	As planned
Running cost for electrophoresis analysis of PCR products	2464	2589	+125	Additional cost covered from the miscellaneous expenses budget
Miscellaneous Expenses	325	0	-325	Covered additional costs of consumables
Total	6000	6000	0	As planned

Exchange rate: 1 £ sterling = 1.6855 AUD

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

The ultimate objective of the final project is devising a good conservation and restoration plan for the study region. This requires much more basic information than we currently have. So, I think conducting research on plant and animal diversity of the remnant patches and identifying key factors responsible for the disturbance and fragmentation of those patches are the most important next priorities.

**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, I have promoted the Rufford Foundation logo during my oral presentation at the 24th IUFRO World Congress, 5-11 October 2014. We have also publicized this logo through a link to the website of our institute.

11. Any other comments?

I highly appreciated and thank the Rufford Foundation for the generous financial support and invaluable contribution in the acquisition of scientific data useful for the conservation and restoration of remnant *Prunus africana* populations in NW Ethiopia.