

## The Rufford Small Grants Foundation

### Final Report

Congratulations on the completion of your project that was supported by The Rufford Small Grants 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**

Grant Recipient Details	
<b>Your name</b>	Torbjørn Haugaasen
<b>Project title</b>	Nutty livelihoods: efforts to save rural incomes and a crucial extractive industry in the Amazon (Brazil)
<b>RSG reference</b>	32.04.09
<b>Reporting period</b>	September 2009-October 2010
<b>Amount of grant</b>	£5723
<b>Your email address</b>	<a href="mailto:torbjorn.haugaasen@umb.no">torbjorn.haugaasen@umb.no</a>
<b>Date of this report</b>	January 2011

**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
Investigate pollination using classic experiments	x			A series of events lead to the abandonment of the proposed work (see below).
Transplantation experiment investigating the best enrichment planting options			x	Experiments were fully achieved. But were carried out in a different region by another member of our Brazil nut research group.
Construct a nursery for Brazil nut seedlings		x		We constructed a small nursery, but some sort of disease attacked the seedlings and most of them died before we could plant them out in the forest. Instead of trying again we have provided seeds to a permanent nursery in a different area and seedlings are now very beautiful.
Carry out a socio-economic investigation of the Brazil nut harvest			x	Information has been gathered through help from local informants.
Workshops or meetings with the local communities			x	Meetings have been held with local people and parts of our work were recently included in a workshop carried out in the study area. The booklet is in progress, but unfortunately things do not always move as quickly as one hopes in Brazil.

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

**A)** Despite my extensive background investigations leading up to the proposed pollination experiments, I have been dreadfully unsuccessful in my attempt to carry out the work as proposed.

Below I briefly list the series of events which lead to the abandonment of the proposed work:

**1.** I was unable to acquire aluminum scaffolding. Despite talking to several hire companies in Manaus, it turned out that the scaffolding for hire were made of iron rather than aluminum as I had requested. This type of scaffolding is far too heavy to transport in the field both by canoe and on foot, especially due to the vast number of pieces I needed – the trees are rather high and the study site rather remote. I was nevertheless able to acquire an aluminum ladder which had been used to study bat pollination of *Ceiba pentandra* (Kapok tree) in the vicinity of Manaus.

**2.** The Brazil nut tree is one of the largest trees in the Amazon. I therefore knew that we had a massive job to work in the canopy of such trees. However, to carry out the work we identified several trees that were younger and significantly lower than other adults and by using single rope climbing techniques we were able to access the canopy. However, we found that we were unable to access the flowers from this elevated position. We quickly realized that to carry out the proposed work we would have to access the canopy from the outside and not from within the tree itself. In the case of ropes, we would then have to use nearby trees – especially trees which join canopies with our selected tree – where a rope would have to be stretched between the two canopies. Unfortunately, this type of access was simply too advanced for me and my hired climber. In addition, Brazil nut crowns largely shade out other trees. In the case of our selected trees, there were therefore no trees near enough to make this type of access possible. Such a scheme would also severely limit the number of flowers available for each rope mount and I imagine that doing the pollination experiments would be very tricky whilst dangling from a rope.

**3.** We were also able to access the canopy using the ladder. However, without additional nearby support we were again forced to abandon these attempts, since we were unable to access the canopy from the outside. It therefore appears that to fulfil the objectives of the proposed work, a more rigid (semi)permanent structure is needed to access the canopy from the outside to reach the flowers. Scaffolding with a platform may be the answer, but I am not convinced about this method either. The necessary structures would require the efforts of a larger working team. Unfortunately, I am currently unable to make another attempt, although this is definitely something, I want to have a stab at again.

**B)** The seedlings in our nursery died due to disease. It became apparent that a more professional structure would be needed for this purpose. We therefore decided to donate seeds and grow seedlings in a nursery in a different area. The seedlings in this nursery are used to, amongst other things, re-planting areas degraded by logging and mining and to safeguard the genetic diversity of Brazil nuts in the region.

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

1) Investigation of Brazil nut pollination requires more manpower (skilled personnel) and a more permanent infrastructure than previously anticipated.

2) An increased understanding of Brazil nut dispersal in secondary forest and we now know with certainty that Brazil nut seedlings grow better under higher light conditions in these areas.

3) Community enlightenment and involvement. Combined, our results suggest that there are a number of simple things which can be done by the local communities to safeguard this economic asset for the future and these methods have been conveyed to the local population.

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

Local assistants were involved in every aspect of the work and several other individuals from the local community were contracted short-term to give us a hand. In this way they learnt a lot about the biology of the Brazil nut tree and this information was also conveyed to the remaining villagers by us or them. We assume that local people positively benefit from our presence due to the

purchase of services and products. Our results suggest that there are a number of simple things which can be done by the local communities to safeguard this asset for the future and these methods have been conveyed to the local population.

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

We are currently keeping a low profile in the study area due to a dry-up of funds. However, I still pay a local person to look after the research station and this person is in regular contact with me via satellite phone. We also work closely with the local people through other projects – particularly a project where we are teaching local people how to monitor large vertebrate populations and some very simple analytical methods for this type of data. We hope to be able to continue the Brazil nut work and now have a master's student who will look at the effect of habitat structure on assemblages of seed dispersers (e.g. agoutis). I would also very much like to have another go at the pollination experiments, but this appears to require a much more structured approach with several more people and more infrastructure involved.

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

The results of this work have already been shared with many interested parties. As already mentioned, we have had meetings with local communities and taken part in a recent workshop. Results have been presented at three international conferences and at the Brazilian Botanical Congress (Manaus, Sept. 2010). Peer reviewed articles have been published and are being prepared for publication. We are therefore certain that all important target groups within Brazil and internationally have been reached. In addition, our work has appeared in national and international media (e.g.: <http://www.bbc.co.uk/news/10105273>) and has been presented in popular science outlets (written and orally).

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

The RSG was used in the period specified in the application.

#### 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
Local field assistance	2100	3060	960	I needed to pay a more professional climber to help ascend into the Brazil nut crowns.
Fuel and oil for outboard and generator	960	960	0	
Field equipment and supplies	982	482	500	Booklet not yet at printers and we did not buy a fish-eye lens. Construction materials for nursery were available after refurbishment of research station.

Food	1530	1170	360	We invested in an extra fish net which increased the supply of locally caught fish.
Food and drink for meetings	150	50	100	Local women kindly provided cakes and other bakery items, which was much cheaper than purchasing outside produce.
<b>Total</b>	5722	<b>5722</b>	0	

\*\*Because RSG was part of a larger budget, deviations from the original budget were not dramatically important for the overall running of the current project.

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

1. Maintaining our good working relationship with the local people in the region.
2. Pollinator populations and pollination success may strongly influence fruit set. It was my hope that a series of classic pollination experiments would shed further light on the situation. This had never before been attempted in a natural Brazil nut population in an intact primary forest setting. Unfortunately, my recent attempts at this work were unsuccessful due to unforeseen logistical difficulties. To me, one of the most important next steps is to somehow manage to unravel the secrets of Brazil nut pollination in a purely natural setting.
3. During our work we also stumbled across some new and exciting avenues that should be pursued. For example, we recently discovered that agoutis may carry away and hide entire Brazil nut fruits, which dramatically increased the distance at which seeds were dispersed. This needs further attention.

### 10. Did you use the RSGF logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?

The RSGF logo has been used in all presentations of the work and the name of the Foundation included in the acknowledgements of all resulting publications.

### 11. Any other comments?

I would like to send a big thanks to RSGF for supporting this project. The support has made an incredible difference to the important work that we have conducted and the results we have obtained.