

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. 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. 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	Lucy King
Project title	“Field trials of a beehive fence to deter crop-raiding elephants Kenya”
RSG reference	45.01.08
Reporting period	End of first year of funding
Amount of grant	£6,000
Your email address	lucy.king@zoo.ox.ac.uk
Date of this report	8 th March 2009

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
Confirm study area and identify community committees			Yes	Two committees were set up to help during the establishment of the project, one from each sub-village In Ngare Mara.
Generate map of elephant movements using local knowledge			Yes	A fascinating set of maps were drawn during community workshops to help us understand how elephants were moving through the area.
Identify worst affected farms			Yes	We found that all farms at the front line of the community were worst affected by crop-raiding elephants.
Interviews with farmers		Yes		We have successfully completed 15 questionnaires from the 25 planned. Others will be completed shortly.
Purchase all building materials for 150 beehives			Yes	All materials were sourced and found locally. Excellent supplies in nearest town of Isiolo only 15kms from the village of Chumviyere. We established a productive beehive workshop that employed 2 main carpenters and 4 assistants.
Hives checked for quality			Yes	All completed beehives were checked by ourselves and the committee chairmen. Excellent quality.
Treating beehives with attractants		Yes		We have tried a number of methods including using varnish and honey. I'd like to try more ideas next year.
Data sheets left with farmers			Yes	We held a workshop to explain to each farmer how to fill in the forms or how to draw the elephant movements for illiterate farmers.
Monitoring of maize growth rate			Yes	We established a weekly monitoring method for measuring the growth rate of the maize in the front line farms.
Measuring rainfall			Yes	We made a rain gauge and trained a community member to take daily rainfall measurements.
Mid-project reports sent to RSG donors			Yes	Three update reports have been sent through to RSG during the year, May '08, Nov '08 and Feb '09.
Beekeeping Workshop			Yes	We had one formal beekeeping workshop where I brought a trainer to the village for a day's activities. We also

				held numerous informal training events with individual farmers on bee husbandry and harvesting techniques.
Data collection for 12 months		Yes & No		After an extensive 8 month set up period we had a disaster when the expected rainy season (Oct-Jan) failed.

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

As our weekly monitoring continued into December '08 we realised that our rainfall measurements had ceased and by Christmas time the records showed that the community had not had a drop of rain since the 15th November. This raised alarm bells with us as the rainy season usually lasts from the end of October through to the beginning of January (often to late January as in 2008).

After returning from a Christmas break I arrived in Ngare Mara in January '09 to find a very sorry sight. The majority of the experimental fields of crops had withered and died and a serious and widespread drought had taken its grip on our area of northern Kenya. We spent a week monitoring the whole situation and by the end of that week at the end of January all the fields of crops had died. This spells complete disaster for the community farmers who have already suffered from a failed harvest earlier in 2008 due to lack of rain. This second harvest failure was unexpected and is a serious problem for the community who were already thin and struggling to feed their families.

In mid January we also witnessed a fascinating event. Within one week ALL the bees in the occupied hives swarmed and abandoned their hives. We had about 25 beehives abandon in one week leaving only 4 occupied hives out of 150. This phenomenon must have been linked to the complete lack of surface water in the community and a lack of grass and wild flowers for nectar. I wish I knew where they have flown to - the elders have guessed towards Mount Kenya where there are constant streams and the climate is cooler.

On my return trip to Ngare Mara at the beginning of February '09 I witnessed government food aid camps setting up and distributing food aid to our communities in response the declaration of "A National Disaster" by President Kibaki at the end of January. This is as serious as it can get in Northern Kenya and unfortunately the incidents of cattle raids and banditry has risen as people are getting desperate to feed their families. Our security in Samburu has been stepped up to ensure our personal safety in the field and now we are all hoping for new rains.

As you can imagine, the problems faced by our communities far outweighs the disaster that the drought has spelt for my experimental work. With no crops there can be no crop-raids by elephants and I have been unable to test out the fence's effectiveness. All I can do now is keep all the beehives well maintained (we have weekly maintenance routines in place) and to wait for the approaching March-April rainy season. The farmers have already started to prepare their land again for the anticipated rains and have all been actively involved in the beehive maintenance.

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

1. We have established an active beekeeping project where several committee members are actively involved in monitoring the beehives and harvesting the honey from full hives.

2. Community members have become interested in elephants and we took the carpenters on a safari into Samburu Game Reserve to show them our study elephants close up. They recognised some highly recognisable individual elephants which was exciting for them. This interest is a crucial element of the project – to try to increase tolerance for elephants in their community lands by providing an elephant related income and incentivizing them to not kill elephants on their land.
3. We have 1500 meters of beehive fences (150 hives) now set up and being monitored on a weekly basis. These hives are being constantly maintained by project staff and committee members and we are waiting for the rains in April 2009. If the rains come we can hope for a forthcoming season of data collecting from April-June 2009.

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

The community has been at the heart of every activity undertaken on this project. Initially we set up two committees to represent the community members and this was very helpful for us in day-to-day activities. The farmers have been consistently involved in building the beehive fences around their particular farmland plots and this helped to generate a genuine interest in the point of the project. We have already harvested some honey from some of the beehives which everyone had a share of (not enough to sell just yet). We have held a successful beekeeping workshop in the school where over 35 community members attended. We have also started employing one particularly active community member to help us with the weekly monitoring tasks.

5. Are there any plans to continue this work?

Absolutely, this project will continue for at least another year, preferably two to help us understand if crop-raiding elephants in the area will become habituated to the beehive fences. In the short term, we are waiting for the next rainy season to arrive (and the harvest) to fully test the effectiveness of this beehive fence against the anticipated crop raids by elephants.

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

Yes, we are already sharing our results on our newly formed project website: www.elephantsandbees.com. In addition we have been discussing the project with the head of elephant protection and conservation at Kenya Wildlife Service, Moses Litoroh. He is awaiting our results of the beehive fence effectiveness after the next season of data collection. I have already presented the stages I went through to set up the project with my research group at Oxford in a 30-minute presentation. We fully intend to publish the results in a peer reviewed journal at the end of the experiment.

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

The RSG grant that we received has lasted 12 months. I initially anticipated that it would last for 18 months but several changes occurred to alter this. Firstly, I spent far more on transporting the beehive materials to and from the community than expected. We were often running up to 2 trips a week to the local town for supplies and the community lies over an hour from our research centre. At the same time we had an almost doubling of the fuel costs in Kenya during the high global oil

prices between June–October 2008. I have had to include some of these high transport costs in the budget. I spent more on materials and supplies for the beekeepers than expected. This included new bee suits, head veils, smokers, hive tools, honey extraction materials, stationary for monitoring and various miscellaneous supplies like gum boots and gloves to stop everyone getting stung during harvesting.

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 £1 = 115 Kenyan Shillings
Salaries for assistants	£1530	£1,335.78	£194.22	I saved some money here but overspent on staff travel expenses (below)
Travel expenses	£270	£349.23	£79.23	Slight overspend, largely due to extra trips to town for nails, wood etc.
Medical Insurance & supplies	£150	£182.12	£32.12	Extra supplies were bought for a small medical kit for the village orphanage.
Diesel for project vehicle	£0	£442.27	£442.27	Unbudgeted expense.
Car Maintenance	£0	£200.38	£200.38	Unforeseen spare parts and break down assistance needed during transport of materials to and from community.
Materials for Beehives and beehuts including fencing wire linking hives.	£3,900	£2,600.32	£1,299.68	We made a significant saving here as we had budgeted for paying for the fence posts for the 150 beehuts. Community members actually donated these posts to the project which was a significant contribution and enabled us to spend the extra funds on transport, equipment and food for the carpenters.
Beesuits, hive tools, honey equipment and farmer supplies	£150	£388.37	£238.37	The cost of beekeeping equipment was certainly underestimated in the original proposal, I also failed to anticipate the number of pieces of equipment that would be needed for the size of community.
Food for Carpenters	£0	£199.11	£199.11	The carpenters made a reasonable request to receive some food assistance during the construction of the beehives which took 4 months.
Communication	£0	£156.52	£156.52	This includes phone credit for all my field staff and community members throughout the year. Essential for keeping in touch when getting supplies, safety etc.

Equipment: GPS	£0	£149.99	£149.99	My GPS broke during the early phases of the project and I had to buy a new one to continue the measurement of the farms and location of the elephant corridors.
TOTAL	£6,000	£6004.08	£4.08	

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

The next stages of the project are to wait for the approaching rainy season and then continue our monitoring through the rains, maize growth and harvest periods which should end around June 2009. I hope to then continue this monitoring through the following October '09 -January '10 field season too.

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?

Yes, the logo features prominently on our new project website www.elephantsandbees.com. I also displayed your logo on a 30 minute presentation I conducted to the Animal Behaviour Research Group at the University of Oxford in June 2008. The logo also features on an information board about the project in Save the Elephant's research centre in Samburu Game Reserve which is seen by a lot of visiting tourists on safari.

11. Any other comments?

Thank you so much for your financial support, the budget was reasonably accurate to the needs of the project over 1 year and such progress could not have been achieved without RSG assistance. I would very much like to apply for a second RSG grant if allowed.