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.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Ravi Corea
Project title	A Land Use Approach to Elephant Conservation: Establishing a Pilot Habitat Enrichment Project to increase forest resources to reduce Biodiversity Loss and Mitigate Human Elephant Conflicts in Sri Lanka
RSG reference	**18.03.08**
Reporting period	Final report (2008-2010)
Amount of grant	£6,000
Your email address	Ravi@slwcs.org
Date of this report	December 23, 2010

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
An enriched buffer and a managed habitat for wildlife		X		Land-based projects have long gestation periods therefore they need to be managed, monitored, and evaluated over the long term.
A buffer that has economic importance for the villagers		X		Again, due to the long term gestation period of land-based projects to fully realize the full potential of the project will take time. In the interim by providing farmers with fast growing grafted varieties of plants especially oranges it has been possible to show the potential economic importance of managed buffers and home gardens.
Community involvement in conservation			X	65 households participated in the project. Due to the success of the project another 100 participants from another village has joined the project.
A sustainable livelihood that is not susceptible to elephant depredations		X		The initial outcomes of the project show that impacts from elephants on the crop/plants types that were selected had been zero. Considering that both trees and elephants live long therefore it would be prudent to monitor the project continuously to observe the impacts elephants could have over the long term.
A higher income to marginalised farmers		X		The quick growing grafted orange provided the farmers with their first harvest last season. As the trees mature and the crop increases the potential income will drastically increase. This is only from the orange trees. When the other plant types also reach succession stage and begin to produce the potential income to farmers would be much greater.
A proven management tool to mitigate HEC		X		To fully realise this goal the project has to be monitored continuously at least for another 5 years.

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

Issues and Responses

1. All of the funds that were expected did not come through therefore the project had to be structured to be managed within the funds that were in hand. This was achieved by scaling down the project as well as using funds generated from the SLWCS paying volunteers program. The Kubota Mini Tractor and trailer could not be purchased due to this reason.
2. A low survival rate of plants. Reasons: Prolonged floods affected the plants making them weak and unable to survive. Drought and fire have had devastating impact on plant survivability. Solution: infilling was done to replace the dead and weak plants. It would be also advisable to show the villagers how to establish fire breaks around their plots. During drought water shortage was a major impediment. Clear signs of water stress were observed during drought and it was identified as a major contributor to plant casualties. Furthermore, ensuring a perennial supply of water was essential for improving income generation through supplementary activities such as livestock farming and agribusiness. A water pump and hoses were provided to the most drought affected area.
3. Livestock raiding, Solution: Provided barbed wire to erect fences around the boundaries of the agro-forestry plots.

During the course of conducting post evaluations of the project the following issues and concerns were identified:

Drought: Severe drought during the dry season is an issue. While most of the plant species were selected for their drought tolerance and suitability to the dry climate, most young seedlings do not have the vigor to survive prologned drought conditions.

Fire: uncontrolled fires set by neighboring farmers and vandals in the dry season were a reason for the destruction of a large number of plants. This an reoccurring and ongoing problem that occurs repeatedly every dry season. One solution is to get the farmers to establish fire breaks around their plots individually or collectively.

Decline in income: Cultivating in the dry zone of Sri Lanka is highly dependent on rainfall. Most dry zone farmers face severe hardships when the rains fail or if there is excessive rain. If they are unable to cultivate one season they become destitute. Such farmers become demoralised, lose interest and stop participating in projects that are supposed to provide benefits over the medium and long terms. For projects which have long gestation periods it is essential to have facilities built into the project to provide relief to such farmers.

Lack of water: The dry zone receives very little rainfall throughout the year with the exception of the north east monsoons that occur from October to February. During this time while there are torrential downpours the excess water causes flooding which can be harmful to seedlings. Also, the rainwater runoff causes leaching of soil nutrients further stressing the plants. While the plant varieties were selected for their tolerance to harsh and dry climates, they still needed some basic nurturing and management. During the peak of the dry season which lasts for about 2-3 months it is critical to provide the plants with water and nutrients.

Solution: The main solution to this problem is to provide farmers with agro and tube wells. In addition, there are permeable clay pots that can be buried next to each plant and filled with water and the mouth closed with an empty coconut shell to prevent mosquitoes from breeding. The water leaching continuously from the permeable pot acts similar to a basic drip irrigation system. The SLWCS intends to implement such an effort as a practical solution for 2010/2011 project period based on acquiring the necessary funding.

Nutrient Management: The post harvest data shows that farmers haven't any concept of applying compost or other necessary fertilisers to their home garden crops as a regular part of their efforts to increase home garden production. During the inception of the project all the participants were trained in compost production and were instructed to fertilise their plants and manage their nutrient requirements. However, a significant number of farmers have not continued to produce compost nor manage the nutrient requirements of their plants.

Solution: A series of retraining programmes and workshops to increase their awareness and aptitude needs to be conducted. More frequent monitoring and troubleshooting needs to be conducted to guide farmers who are falling back on their commitments.

Weeding: Weed control is important to ensure growth of plants because weeds compete directly with crop plants for water, nutrients, sunlight and space. Proper weeding has not been done by some farmers mainly due to their poor understanding regarding perennial crop management. Their overall knowledge and experience are cultivating seasonal subsistence crops such as rice and corn which do not need extensive management. They are mainly concerned with taking care of major seasonal crops such as rice and cereals and less with home garden and perennial crops because they depend more on the former even though the uncertainty and the economic risks associated with those crops are greater. Neglected home gardens and agro-forestry plots show a heavy growth of weeds and invasive plants which are also a fire hazard apart from competing for water and nutrients with crops.

Solution: A series of retraining programmes and workshops to increase their awareness and aptitude needs to be conducted. More frequent monitoring and troubleshooting needs to be conducted to guide farmers who are falling back on their commitments.

Unexpected weather conditions: The project area in Wasgamuwa is in the dry zone of Sri Lanka which is prone to droughts. The weather in the country is influenced by two monsoon rainy seasons. They are the south-west and north-east monsoons which alternatively bring rain to the north-eastern and south-western parts of the island at different times of the year respectively. The two monsoons are intercepted by the central highlands; consequently, the leeward side is subjected to scorching winds causing a dry spell. In addition, there are the inter monsoon rains. Hence in most parts of the country rain fall follows a bi-modal pattern leading to a main cropping season called *Maha* which is from October through January and a minor cropping season called *Yala* which is from March through July. As can be expected with rain-fed agriculture farmers are very much affected by the volume, unreliability and failure of rainfall. Some years the inter-monsoon rains fail completely leading to prolonged drought conditions. 2009 was a drought year which affected the plants adversely.

Solution: It is necessary to provide farmers with agro or tube wells, water pumps and hoses to irrigate during the peak dry season and droughts. Water can be pumped from perennial water sources such as agro wells, tube wells, and natural springs that are in the area.

The biggest factors that affected plant survivorship were fire, drought and damage by livestock. It is very interesting to note that none of the seedlings or plants was destroyed by elephants. Therefore, there is tremendous potential for the project to achieve its goals and objectives. The impact from fire and drought are challenges that need to be overcome to ensure the success of the project.

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

One of the drawbacks with community-based projects especially if they involve land use-based activities such as agro-forestry, habitat enrichment, livestock farming and alternative agriculture activities, is their long gestation period. Generally, such integrated projects that provide long term benefits go beyond the normal funding cycles of grant makers. This is one of the biggest challenges faced when establishing integrated land-based community projects since they need to be monitored and managed for at least 5 years or more. Also, it is important to concurrently establish the livestock component so that programmes such as habitat enrichment and pasture development can be designed from the very beginning to meet the requirements of livestock and wildlife.

Project Impacts

In land that have been managed using agro-forestry and holistic land use concepts the following changes can be observed:

- Conversion of abandoned *Chena* lands into agriculture and agro-forestry production.
- Minimised soil degradation and maximised resource utilisation within individual plots.
- Increased incomes of farmers from intercropping.
- Greater utilisation of the landscape for both agriculture and agro-forestry.
- Increased production of land throughout the year.
- Increased food security and reduction of the uncertainties associated with monoculture cultivation.
- Increased the forest cover in abandoned *Chena* lands
- Increased the green cover in the area by improving home gardens.

In contrast the following negative impacts can be observed in lands that are mono cultivations:

- Increase in soil degradation.
- Decrease in water holding capacity of the soil.
- Tremendous reduction of biodiversity in monocultures especially in land cultivated with corn.
- Increase in the populations of grain feeding birds especially alexandrine (*Psittacula eupatria*) and rose-ringed parakeets (*Psittacula krameri*).
- Increase in the quantity and diversity of weeds.

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

Though the initial objective of the project was to conduct the project in 20 acres/8 ha at one project site the SLWCS established several projects in the following sites:

#	Village	DSD*	Province	Project	Households
1	Irriyagaha Ulpotha, Wasgamuwa	Wilgamuwa	CP†	Alternative Crops	7
2	Himbiliyakada, Wasgamuwa	Wilgamuwa	CP	Alternative Crops	48
3	Irriyagaha Ulpotha, Wasgamuwa	Wilgamuwa	CP	Habitat Enrichment	SLWCS
4	Pussellayaya, Wasgamuwa	Wilgamuwa	CP	Habitat Enrichment	SLWCS
5	Moragaha Ulpotha	Wilgamuwa	CP	Habitat Enrichment	SLWCS

*Divisional Secretary Division
†Central Province

The reasons to implement the project at several sites was to ensure that by experimenting with as many diverse terrains to learn as many lessons as possible as well as to spread the benefits of the project.

In total, 64 families from 55 households from the two villages of Himbiliyakada and Irriyagaha Ulpotha in Wasgamuwa participated in the project.

From 55 initial participating households, 35 households had very successfully maintained their plants. The households also were able to obtain good yields from the grafted orange plants that were distributed to them as part of the project. Most farmers had consumed their yield while a few had sold their produce and generated some income. Several participating farmers from the Himbiliyakada village had generated for the first time an income from the project.

The progress of the project was measured by conducting post evaluation surveys and gathering harvest data. The data was collected by interviewing the most successful 35 farmers from a total of 55 households at Himbiliyakada and Irriyagaha Ulpotha who initially participated in the project.

- Due to the success of the project there is now a big demand from other communities to establish similar projects in their villages. Therefore, it is recommended that this project is continued over the long term.
- The livestock development component should be initiated and operated concurrently with the other land use programs.
- The SLWCS needs to maintain long term monitoring, supervising and evaluation of the project to ensure the success of the project by providing the necessary guidance, supervision and troubleshooting until the stakeholders have build the necessary capacity to operate own their own.

5. Are there any plans to continue this work?

There is tremendous community interest to continue the project. Also as mentioned earlier land-based projects with long gestation periods need to be administered, monitored, and evaluated over

the long term to ensure their success. If the necessary funds can be procured, then the SLWCS intends to continue with the project.

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

The SLWCS intends to share the results by:

- Publishing a manual.
- Publication of articles.
- Establishing similar projects in other communities.
- Making the reports available online in the SLWCS website.
- Holding workshops.

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 over a 2-year period. This compares well with the project action plan that was formulated.

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
Wages	£3,350	£6,750	£3,400	The deficit was covered by £1500 received from the Cleveland Metroparks Zoo (CMZ) and the balance was covered from the SLWCS paying volunteers programme.
Transportation	£750	£2,750	£2,000	The deficit was covered by £750 received from the CMZ and balance by the SLWCS
Grasses and plants	£1,400	£3,800	£2,400	£1,900 by CMZ balance by SLWCS
Transportation/Fuel	£300	£1,440	£1,140	£780 by CMZ balance by SLWCS
Communications	£200	£590	£390	£390 by SLWCS
Total	£6,000	£15,280	£9,280	

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

The SLWCS would like to continue the project because of the tremendous implications the project has for minimising human elephant conflicts, which is one of the biggest environmental and socio-economic crises of rural Sri Lanka as well as addressing climate change adaptation which would be the next biggest environmental concern in the new millennium. Ideally the SLWCS would like to expand the project at the Moragaha Ulpotha site to also include a community-based amphibian conservation project and habitat re-creation effort for endangered amphibians.

Amphibians are one of the most vulnerable vertebrate groups to environmental perturbations—especially climate change—mainly because of their unique life cycle, physiology and ecological

needs. The Low Country Intermediate Zone (LCIZ) of Sri Lanka where Moragaha Ulpotha project site is located is one of the most sensitive climatic zones vulnerable to climate-related weather aberrations and events induced by climate change. Both amphibians and the habitats they inhabit in the LCIZ are under threat. The LCIZ is one of the least studied climatic zones. Seven amphibian families representing 16 genera consisting 36 species of which 21 are endemic with one endangered and one critically endangered species are found in the LCIZ. This is a region that definitely needs to be studied to develop conservation measures for the incredibly unique amphibian fauna that is found there. The SLWCS would like to conduct one of the first field assessments to identify all the amphibian species, their habitats and breeding locations and also to conduct an innovative habitat re-creation effort as well as a participatory community-based programme for amphibian conservation. Rural households at our project sites will be encouraged to adapt land use systems that not only contribute to minimizing HEC bit also at the same time contribute to amphibian conservation.

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 was used on the SLWCS 2006-2008 Annual Report and in the official invitation for the 10th Anniversary celebrations of the Saving Elephant by Helping People Project that was held in September 14, 2009.

11. Any other comments?

We would like to know whether it would be possible to receive funds to continue the project as well as integrate the amphibian conservation program since amphibians are very vulnerable to climate change, and they are an essential component of wise land use, sustainable agriculture and wildlife conservation.