

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	Dinarzarde Raheem
Project title	Conserving land snails in Sri Lanka's fragmented tropical forest landscapes
RSG reference	9154-1
Reporting period	March 2011-August 2012
Amount of grant	£5888
Your email address	dinr@nhm.ac.uk
Date of this report	12 October 2012

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
a) Generate much-needed data on the distribution of poorly-known, endemic land snails			Yes	<p>A total of 75 sites were surveyed. These sites consisted of non-protected natural forest patches (both old- and re-growth) and synanthropic habitats, mainly in the form of home gardens. The sites were mostly located in the three regions forming the focus of the study (the Lower Kelani Valley, the Northern Intermediate Lowlands, and the Central Highlands, where due to time constraints surveys were restricted to the Eastern Upper Uva). Opportunistic/casual observations were also made from a few sites in areas adjacent to the three focal regions.</p> <p>A total of 43 species (37 endemic), belonging to 19 genera and 11 families, was recorded. This is a surprisingly high total because the habitats surveyed were small degraded patches of forest or synanthropic habitats such as home gardens. That so many species have been recorded can be attributed to a combination of field expertise and the extensive preparatory work that was carried out prior to the actual surveys (e.g. study of current and historical maps of land-use and topography and recent satellite data, interviews with land users and managers, and field reconnaissance).</p>
b) Identify high-priority conservation areas for narrow-range endemic snails		Yes		<p>What has become clear to me over the course of the project is that for the three focal regions we have moved beyond the issue of prioritisation. The survival of the native snail fauna in all three regions crucially rests on the conservation of old-growth and re-growth natural forest (virtually all of this is highly degraded), with modified habitats, particularly home gardens, acting in a supplementary role. We need to conserve as many of these remaining habitat patches as possible. The reasons are threefold. First, habitats suitable for native land snails only account for a small proportion of the total</p>

				<p>land area in the regions studied and are highly fragmented and scattered. Second, most of the land snail species present in each of the three regions are restricted in their distribution within a region. Third, and perhaps most critically, Sri Lankan land snails, even the more widespread species, are very patchily distributed. Within its natural range, a species may be present and highly abundant in one habitat patch, but may be absent or rare in other neighbouring patches. Moreover, species are usually localised to particular sites within patches.</p> <p>What we urgently need is a really good grasp of what habitat patches remain, how they are distributed across the three regions and what species they contain, and for that further field surveys of both the snail fauna and remaining habitats are vital.</p>
c) Contribute to the long-term conservation of fragmented biota by developing strong links with major commercial plantation companies and owners			Yes	<p>I have met or communicated with plantation company personnel at a range of different levels, from CEOs and senior and mid-level managers to personnel directly responsible for environmental policy. The response has been extremely positive – interest in the value of plantation lands for the conservation of native biota is growing. Although the habitat patches remaining on plantations are often degraded, they are intact and protected by the plantations as reservations (usually for reasons of watershed and soil conservation). Efforts must be continued to raise awareness in the plantation community of the biological importance and conservation of native habitat patches in plantations. One avenue that I hope to explore in collaboration with key players in the industry is the development of a web-based information hub with extensive high-quality data on the biological diversity of native habitat patches on plantations.</p>
d) Increase general awareness of Sri		Yes		<p>My original aim was to carry out an educational/public lecture programme</p>

Lanka's snail fauna, the importance of natural forest for the survival of endemic biota, and the conservation measures needed				that would be strongly scientifically grounded. The talks done did raise awareness of the diversity of the Sri Lankan biota and the importance of conserving it. However, they fell short of what I originally envisaged: a lecture or series of short talks, explaining the biotic consequences of forest fragmentation and climate change, and the measures needed to conserve forest biota in the face of these changes. I have found the preparation of the educational material far more challenging and time-consuming than I thought would be the case, and realise my aims were too ambitious for the timescale of the project. I have invested a great deal of time in researching, collating and translating the educational material and I see the educational campaign as the logical next step to the project just completed.
---	--	--	--	--

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

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

a) The project has yielded new and important data on snail distributions. These data advance knowledge on the distribution of poorly-known restricted-range species, and they will be combined with other published and unpublished data, to assess the current conservation/threat status of individual species. The data also substantially advance knowledge on the snail fauna of three poorly explored parts of the island. They confirm that each of the regions studied have a set of endemic snails that on an island-wide-scale are entirely restricted to that region and immediately adjacent areas.

b) The distributional data when coupled with land-use and environmental data from maps and field observations strongly suggest that the conservation of native snails in all three regions rests crucially on conserving all or most of the remaining patches of natural forest (both old- and re-growth), with home gardens being vital additional habitats, particularly in landscapes that have been completely or almost entirely deforested.

c) The project has enabled me to work towards the long-term conservation of snails and their habitats by giving me the opportunity to establish and explore links with the commercial plantation industry, and to raise awareness and increase knowledge on the importance of commercial plantation lands for conserving native species.

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

5. Are there any plans to continue this work?

Yes, I plan to continue this work. An important priority, at this stage, is to raise public awareness on recent scientific research on the biotic effects of forest fragmentation and climate change, and the conservation measures needed to conserve tropical forest biota in the face of these changes.

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

Survey results and conservation recommendations for individual sites and/or landscapes will be made available to plantation companies and owners in report-form. Data and findings will be submitted to relevant government and non-state bodies, presented at international meetings, and published in international peer-reviewed scientific journals and as popular publications (publications will be available online through <http://www.nhm.ac.uk/tropicalsnails>).

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

As envisaged, the grant was utilised over an 18-month period.

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. Laptop and second-hand/new multi-media projector	700	307	393 (+)	I was able to borrow a multi-media projector, so didn't purchase one, and split the allocation for this between items 2 and 3.
2. Travel (hire of 4 WD vehicle and experienced driver for fieldwork)	3195	3451	256 (-)	Travel costs have increased over the duration of the project and this is closely linked with rising fuel costs.
3. Food and accommodation	1558	1771	213 (-)	Food prices have increased over the duration of the project and this is closely linked with rising fuel costs.
4. Local guides (payment for assistance with accessing sites)	315	293	22 (+)	Expenditure on this was a little less than anticipated, so the remainder was re-allocated to items 2 and 3.
5. Waterproof clothing (hooded jacket and trousers for 4 persons)	120	66	54 (-)	Good-quality waterproof jackets were available at a relatively low cost in Sri Lanka, and this brought down overall expenditure; the remainder was re-allocated to items 2 and 3.
Total	5888	5888		

The currency exchange rate used (£ 1.00 = Rs.194) is the average of the interbank bid rate for 1 March 2011 and 31 August 2012 as given at <http://www.oanda.com/currency/converter>.

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

a) Raise public awareness through lectures and the print media on: (1) the effects of habitat fragmentation on forest biota, and the conservation measures needed to conserve forest biota in fragmented landscapes; and (2) the need for a robust, science-based approach to conservation decision-making. These two issues can and should be addressed alongside each other.

b) Further surveys are essential to improve knowledge on the distribution of land-snail species. Despite the substantial advances made in the last few decades, there are a substantial number of endemic snails that continue to be poorly known, and the land-snail fauna of extensive parts of the island have yet to be explored.

c) Develop a more systematic understanding of the location, extent, floristic type and disturbance history of remnant forest patches in the more severely deforested and fragmented landscapes of Sri Lanka's wet and intermediate zones. This could, for example, be achieved within the context of a web-based project focused initially on one area (e.g. the Eastern Upper Uva), with available data on individual sites (e.g. access, biotic composition, references to primary literature and relevant topographical maps) and links to relevant satellite imagery (e.g. Google Earth, Landsat).

d) Continue efforts to improve awareness in the plantation industry of their role in the conservation of Sri Lanka's biodiversity. I plan to take this forward by collaborating with one or a few of the key players in the commercial plantation sector on the development of a web-based information hub with extensive high-quality data on the biological diversity of native habitat patches on plantations.

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 logo was used in the public/scientific talks given during the duration of the grant, and will be used in other materials generated from the project (e.g. reports to plantation companies).

As outlined above I have been working on a popular lecture on forest fragmentation and climate change and their conservation implications, and as much of the groundwork for this has been done during the Rufford project, I will be using the RSG logo on the lecture slides.

The RSGF's contribution will also be acknowledged in scientific publications that utilise distributional data from this study; I will be submitting at least two papers for publication in international scientific journals next year.

Together with another Sri Lankan colleague, I have been working over recent months on a Sinhala-language guide to the Sri Lankan land-snail fauna. It will be a revised and updated edition of the English-language guide produced in 2006 (Raheem & Naggs, 2006) and will incorporate findings and images from the Rufford Project. I aim to have this guide in press next year, and will use the RSGF logo in this publication.

References: Raheem, D., & F. Naggs. (2006) *An illustrated guide to the land snails of Sri Lanka natural forest and cultivated habitats*. The Natural History Museum, London.