

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 Ramalingam
Project title	Evaluating the efficiency of restoration efforts in reviving ecosystem health using ants as indicators of restoration success.
RSG reference	27 th June 2008
Reporting period	June 2008 to Feb 2010
Amount of grant	£4,990
Your email address	raviram@atree.org
Date of this report	31 st March 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
Estimation of ant species richness, and diversity.			Yes	The pitfall trapping method of the project has been very successful in providing a good and reliable checklist of ants in the region. In general, more ant species were encountered in restored sites compared to that of degraded arable lands and forests (as controls). However, more specialist ant genera were found in forests, while restored sites were occupied by generalist species.
Diversity patterns			Yes	The ant diversity pattern observed conformed to intermediate disturbance hypothesis, where the ant diversity was high in the restored sites compared to the arable fields and forest sites. This is an indication of on-site low intensity and less frequent disturbance due to restoration activity.
Recolonisation pattern of ants in the restored sites.		Yes		Although the ant functional groups were analysed to assess the recolonisation pattern in the restored sites, not all the functional groups followed the general trends reported from other biogeographic areas, such as Australia, Mediterranean regions etc. As the application of ant functional groups itself is new in the Western Ghats, more information pertaining to natural history of the ant species of this region is required.
Developing rapid monitoring protocol			Yes	A simple monitoring protocol (in the form of a pictorial document) was developed based on the presence/absence of specialist/generalist ant species in different restored sites (along the trajectory of chrono-sequence). Further, these materials will be used by the officials of Attappady Hills Area Development Society (AHADS) and the local community involved in restoring the Attappady landscape.

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

The experimental design that was proposed initially relied on block wise treatment design. Although I was able to select sites of different age i.e., after restoration efforts began (treatments) within blocks, the forested areas as controls were not available. To compensate for this, four sites as controls from the adjoining Anaikatty reserve forest were selected based on their closest proximity to each block.

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

First, from this project, nearly a hundred species of ants were collected from the restored sites of the Attappady landscape. Further, the presence/absence of each species along with data on habitat variables indicated that different species occurred in different habitat conditions. Thus, these results are informative with respect to ant species natural history. Apart from this, a detailed ant checklist was prepared for the region. This data provides a baseline data for future monitoring for assessing the restoration success.

Second, the patterns observed in terms of species richness and diversity conformed to intermediate disturbance hypothesis and was indicative of disturbances created due to restoration activity. Coupled with this finding, the application of ant functional groups was successful in studying the responses of ants to habitat restoration efforts in Attappady hills as the nature of degradation (prior to restoration) is markedly different from that of in mine sites. Thus, this study indicates that these types of studies have wider applicability and need not be restricted to studying mine site reclamations.

Third, the ant and other insect collections made through this project are housed in ATREE's insect taxonomy and conservation laboratory. These specimens stored in both wet and dry forms will aid taxonomists and molecular biologists in taxonomic revisions, molecular phylogeny and evolutionary studies of insects.

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

As stated earlier in section 1, a simple monitoring protocol (in the form of a pictorial document) was developed based on the presence/absence of specialist/generalist ant species in different restored sites (along the trajectory of chrono-sequence). These handouts are intended for the use by restorationists and local communities for monitoring the progress of their restoration efforts.

Other than this, for field work, local people were employed as field assistants. Instead of employing one person for the entire study period, a group of gentlemen were employed for quickly disseminating insect conservation values among the locals.

5. Are there any plans to continue this work?

Yes, future work will focus on assessment of recolonisation pattern with respect to multi taxa approach that includes various insect fauna and birds. This will help in evaluating the suitability of using such taxa as monitoring tools in assessing restoration success by the local community as it is

evident that people can identify birds easily compared to identifying insects. This work will require funding to facilitate the data collection.

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

Important findings will be submitted to peer reviewed journals such as *Restoration Ecology* and *Forest Ecology and Management*. In addition, technical reports will be submitted to various NGOs such as AHADS, FES etc., which are actively engaged with local communities in restoring nature.

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 for 20 months, from July 2008 to February 2010. The actual length of the project was 15 months, but ant species identification and analysis took another 5 months.

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
Travel (vehicle hiring charges)	2900	3300	400	Due to higher fuel prices.
Accommodation and field allowance	720	600	120	Difference used for travel
Field assistant	540	600	60	Were slightly less than anticipated.
Communication	200	100	100	Difference used for travel
Expendable supplies, insect boxes, traps and literature	630	510	120	Traps, chemicals and insect boxes were cheaper than anticipated.
Total	4990	5110	120	charged to another project

1 GBP = 85 INR

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

This project supported by RSG is an integral component of my PhD thesis regarding the studies on ground insect community responses to habitat restoration efforts in the Western Ghats. Further, the important findings from this project will be published in peer reviewed journals to provide important information to people planning restoration projects in similar landscapes.

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 RSG logo was used in PowerPoint presentations, posters and handouts at conferences, and in technical reports. The logo will also be used in PhD dissertation and publications. The RSG was publicised during informal meetings among peers and associates.

11. Any other comments?

The RSG has played a significant role in this project. Without this support, the research would have been limited in its capacity to inform decisions regarding assessing restoration success of the Attappady hills.