

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	Sutomo
Project title	Establishments of Species Diversity Following 2010 Catastrophic Eruption of Mt Merapi, Java Indonesia: Implication for Conservation and Restoration.
RSG reference	10179-1
Reporting period	8 th September 2011 - 8 th September 2012
Amount of grant	£5000
Your email address	sutomo.uwa@gmail.com
Date of this report	6 August 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
Locating suitable location for sampling and establishing demo plot	-	-	√	The survey has found a good location to establish restoration plot. A flat land on top of the Kuning River was used. This area is still relatively remote due to the location. On its right is Adem River, and on its left is Kuning River and so human activities are minimal.
Conducting field sampling of pioneer plants, bird species and soil seed bank on impacted area and least or non impacted area	-	-	√	Field observation to gain data on the species diversity including pioneer plant species : above ground and below ground (soil seed bank) and also bird species were conducted on the South Flank of Mt. Merapi in an altitude ranging from 900 – 1200 m asl. In addition we also measure environmental factors that may have played important factors in the distribution of the species diversity. For this field sampling we were assisted by year-4, undergraduate students from The UIN Jakarta
Conducting tree seedling planting on the demo plot on the impacted area	-	-	√	In early January 2012, coordination with Merapi National Park authority and local people in Kaliurang Village were done to prepare for demo-plot/rehabilitation plot establishment. In mid-January, the plot was established. The plot is 0.5 ha in size and it was planted with 600 tree plant seedlings. In the establishment process we were assisted by local people in Kaliurang (farmer group).
Identifying pioneer plants above ground and soil seed bank and also birds photos sample species found on the sites	-	-	√	For this stage, we use flora books such as the Flora of Java, Ecology of Java and Bali and Mountain Flora of Java as well as went to the Herbarium Bogoriense to consult with a botanist. For birds' species, we use book from McKinnon, field guide to Java and Bali Bird.
Conducting monitoring to the demo plot	-	-	√	Monitoring to the demo plot is necessary to gain current data regarding the planted tree species, to evaluate which species has the highest survival rate. In this stage we were assisted by undergraduate students from

				Universitas Gadjah Mada.
Producing booklet of the research results and distribute it to other stakeholders	-	-	√	The booklet size is 10.5 cm x 15 cm contain of 16 pages including 1 cover page and a back page.
Scientific manuscript preparation for journal publication	-	-	√	Manuscript on pioneer plant establishment on Mt. Merapi (Bahasa Indonesia version) was completed and has now been prepared for national journal. We are also now start preparing writing for international journal.

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

In late December 2011 and early January 2012, heavy rains occur in Jogjakarta city and had caused cold-lava and mudflow flood from the Mt. Merapi Volcano in rivers surrounding the mountain. This weather condition limits our movement and so we decide to take it slow rather than forcing to work in such a bad weather. There was also problem with current Merapi landscape. The recent 2010 eruption has changed the landscape structure significantly, and so, the sites that were used to be accessible are now disconnected due to the flows of the pyroclastic debris that created a wide gap of steep ravine. These ravines were some of cautious attention due to the mudflow that tends to flow in these ravines when heavy rains occur. We took very cautious work when doing the field sampling. We have coordinated also with local park management authority and local search and rescue team and always update our location through GPS.

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

Firstly, is the availability of initial database (species lists) for species diversity establishment following eruption of Mt. Merapi. Why this is important? Mainly because Mt. Merapi has frequent interval eruption and so it is important to keep track of record of every species in vegetation establishment in every eruption event to observe the ecosystem resilience in coping with this volcanic disturbance and study of succession is also make possible with this database.

Secondly, the establishment of demo-plot planting of 0.5 ha planted with 600 individual from 5 different tree species on the impacted zone on Mt. Merapi, allows us to learn which species has the highest survival rate and longevity to cope with such harsh volcanic environment. This information will be useful when we considering on planning to conduct land restoration and or rehabilitation.

Thirdly, the availability of information of the research results in a form of simple and easy to read and carry booklet with English narrative in order to allows wider audience nationally and internationally. The booklet has been distributed to many government departments, universities (national and international), research institutes, agencies, NGO's and also to interested community group.

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

Local people and community group greatly contribute in helping this project to succeed. In the establishment process of the demo-plot, we involved many local people in Kaliurang (farmer group community). They helped us to prepare the site, transported the seedling to the planting site and to plant the seedling in a pre-prepared planting hole. In addition, when field sampling was conducted, we also accompany by local guide to help us with the safest and fastest route to the field sampling of interest.

5. Are there any plans to continue this work?

Arthropods are also considered as the pioneers of the barren pyroclastic surfaces and initiators of biological succession. In the sampling sites for the pioneer plants we encounter arthropods species such as surface predators and scavengers but at that time there was no adequate time and resources to collect their sample. Therefore further research is needed to study the diversity and the roles of arthropods in primary succession on Mt. Merapi. Soil macro-fauna can be used also to see the disturbance recovery.

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

Results of this work is shared through booklet that has already been distributed to various stake holders such as: the Merapi National Park Management, Gadjah Mada University and the Faculty of Forestry, Bogor agricultural Institute, South East Asean Biology tropical (SEAMEO-BIOTROP), Bukit Barisan National Park Sumatera, Nature Protection agency office Mataram, Bogor Botanical Garden, Cibodas Botanical Garden, Centre for Agroforestry Research Ciamis West Java, School of Life Sciences University of Nevada Las Vegas, Oregon State University, School of Natural Sciences Edith Cowan University, School of Plant Biology the University of Western Australia and Jakarta State Islamic University just to name a few. The results will also be published in national and also international journals and also as oral or poster presentation at various seminar and conferences.

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

No.	Activity	Time	Compared to the anticipated length
1	Preparation	October- November 2011	As anticipated
	Collecting basic information (secondary data)		
	Permit and other administrations		
2	Preliminary surveys	December 2011	As anticipated
	Gathering information from local people and other authority		
	South Area		
	West Area		
3	Fieldwork	January – February 2012	As anticipated
	Pioneer vegetation observation		
	Soil seed bank sampling		
	Birds observation		

	Demo plot establishment		
4	Identification and sowing soil seed bank	March-June 2012	As anticipated
	Plant herbarium identification		
	Birds photos identification		
	Soil seed bank sample processing in nursery and identification		
5	Booklet and poster production	June-July 2012	As anticipated
	Data compilation and analysis		
	Design, printing and distribution		
6	Fieldwork	June 2012	As anticipated
	Demo plot monitoring		
7	Paper publication	July-August 2012	As anticipated
	Manuscript preparation		
8	Final Report	August 2012	As anticipated

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
Permit fees	100	100	0	
Supplies and equipment	350	333	+17	The surplus used to subsidise the deficit post.
Transportation and lodging while fieldwork	947	1970	-1023	Lodging and transportation costs were more expensive than we expected as it was a bit difficult to find suitable place which was close enough to the sampling sites but still has the comfort to serve as base camp. Also transportation is more expensive due to for mobile purposes.
Living expenses while fieldwork	1300	750	+550	On other hand, food expenses while fieldwork was less expensive that we expected. The surplus used to subsidise the deficit post.
Research assistance fee	480	160	+320	Research assistant fee was less expensive that expected due to kind help from students. The surplus used to subsidise the deficit post.

Documentation	100	50	+50	Documentation also less expensive than expected due to one of the team member has photography skill. The surplus used to subsidise the deficit post.
Communication	123	98	+25	Communication expenses also less expensive. The surplus used to subsidise the deficit post.
Restoration plot establishment	800	700	+100	The surplus used to subsidise the deficit post.
Booklet production	700	700	0	
Plant identification costs	100	100	0	
Total	5000	4961		

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

Next important steps would be to continue to work on various aspect of ecosystem restoration such as conservation biology, ecology with landscapes point of view and social approach on Mt. Merapi.

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 RSGF logo was used in every presentation made for presentation with authorities. The logo was also used for publication in the booklet and poster.

11. Any other comments?

Mt. Merapi offers a unique volcanic ecosystem in which it has received scant attention. Mt. Merapi has the potential to be natural laboratory to study various aspects of sciences including conservation science. Repeating volcanic eruption with short, medium and long intervals poses a threat to the plant and animal species on Merapi, however this phenomenon also gives us the opportunities to study the resilience of the ecosystem, how plant and animal species cope and endure the catastrophic eruption to maintain its existence in that particular ecosystem. Therefore, I am really grateful to be sponsored by Rufford Small Grants and to have the opportunity to learn from Mt. Merapi.