

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	Fragmentation, Plant Invasion and Native Species Conservation in Tropical Forest Landscape of Mt. Merapi.
RSG reference	13139-2
Reporting period	21 March 2013 - 21 March 2014
Amount of grant	£5250
Your email address	sutomo.uwa@gmail.com
Date of this report	December 2013

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 establishing sample plots	-	-	√	The survey has found a good location to establish sample plots. Invasive species beside influenced by the eruption also benefited from human activities. We found that Kaliadem and Kaligendol areas are now become tourist spots for lava tour. Also in July 2013, the mountain had a small scale eruption and one of the area passed by the ashes was Kalikuning and Kaliurang.
Conducting field sampling of native, exotic and invasive plant species	-	-	√	Field observation to gain data on the species diversity including native and exotic species. Sampling were conducted on the South Flank of Mt. Merapi in an altitude ranging from 900 – 1200 m asl. Other habitat variables such as soil pH, soil moisture and land slope also measured using Suunto clinometer, Garmin GPS, and soil tester Nakamura. In this activity we were assisted by local guide, forest ranger and some staff of the Merapi National Park.
Identifying plants 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.
Data analysis and giving training on field data analysis to the Merapi National Park staff	-	-	√	Data analysed using PRIMER software, data square root transformed and presence absence transformed. Beside simple diversity indices, ordination analysis were conducted i.e. non metric multidimensional scaling. We also conducted training to the technical and also research staff of the Merapi National Park authority on the field data analysis using PAST software.
Weed risk assessment	-	√	-	Weed risk assessment can be a valuable tool for minimising invasive plant problems. However, problems in obtaining an objective measure of the hazards posed by weeds, challenges of predicting complex hierarchical and

				nonlinear systems, difficulties in quantifying uncertainty and variability, as well as cognitive biases in expert judgement, all limit the utility of current risk assessment approaches.
Producing book of the research results and distribute it to other stakeholders	-	-	√	The book will be distributing to the Merapi National Park as well as other national parks in Indonesia, the SEAMEO BIOTROP in Bogor, all botanical gardens in Indonesia, LIPI, Forestry Department, and universities.
Scientific manuscript preparation for journal publication	-	-	√	Manuscript on exotic invasive plant on Mt. Merapi will be prepared and once completed will be submitted to national accredited journal in Indonesia.

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

Unprecedentedly, in July 2103 the mountain had a small-scale eruption. Volcanic ashes poured down to the surrounding areas of Jogjakarta. This condition of the mountain limits our movement and so we decide to take it slow and always update with the current status of the volcano. 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.

The health of every team member also needs to be considered seriously. One of my team members did not advise me in the beginning of the fieldwork that he has a high blood tension health issue. Until in the middle of the fieldwork stage he felt unwell and so I took him to the nearest hospital and turned out his blood tension was 200/90. He was then was given medicines to lower the blood tension and was observed in the hospital for a few hours and now he is recovering with regular intake of medicine to lower his blood tension. Another team member also had an asthma and so I took her to a hospital in Jogjakarta and she is now recovering from her asthma with ventolin prescription from the doctor. The working environment of a volcanic mountain, a cold temperature with hot dry in the noon and volcanic ashes in the air creates a suitable allergic for asthma.

Formal training in weed risks assessment we think is needed due to the limited of our capability and experience in doing this. Perhaps in the next project, we could collaborate with the SEAMEO BIOTROP to give the training with the target group also include the National Park management and local village leaders or interested participant.

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

Firstly, is the availability of species lists for species diversity establishment following the latest small scale eruption of Mt. Merapi in July 2013. Again, 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. This list emphasises which species are native, which are exotic.

Secondly, training on field data analysis gave a very important contribution to the national park managers. This training enhances and broadens its staff skills and knowledge regarding multivariate analysis. Following this activity, we hoped that managers working in the field would be able not only to collect data but also to analyse it and make a meaningful conclusion and lead to a significant management recommendation of the national park.

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

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

Many of the staff from the national park office is local people. They were also participating in the data analysis training and also went on the field with us to conduct field sampling. Therefore, not only they now have skills about field data sampling firsthand directly from the field but also data analysis on a laptop computer. I think these skills would very much benefit to them and they could pass on these skills also to their colleagues.

5. Are there any plans to continue this work?

Mount Merapi still remains mystery which slowly began to be unrevealed through scientific research. In the future I would considered that we need to establish some kind of herbarium or conservation building/room which can function as education tools for people living with Merapi and also for wider publics including academics, students and other government agencies regarding plant species on Mt. Merapi. This would include activities about native species conservation and also identifying alien/exotic and invasive species on Mt. Merapi. Thus the awareness regarding these would be increase throughout the society. Direct implementation could be seen in the what I hope will be the careful selection of species that will be used for land rehabilitation on Mt. Merapi, to avoid further introduction of alien species.

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

We had made book regarding invasive alien species on Mt. Merapi. This book will be distributed to stake holders that concern about Merapi such as academics, teachers, students, and government agencies, and NGO.

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	April-May 2013	As anticipated
	Collecting basic information (secondary data)		
	Permit and other administrations		

2	Preliminary surveys	August 2013	As anticipated
	Gathering information from local people and other authority		
3	Fieldwork	September– October 2013	As anticipated
	Vegetation and Habitat data observation		
	Data analysis training		
4	Plant Identification	October 2013	As anticipated
5	Data analysis	October 2013	As anticipated
	Weeds risk assessment		
6	Book production	November 2013	As anticipated
7	Final report	December 2013 - January 2014	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 arrangement cost	200	200	0	
Supplies and equipment	500	450	+50	The surplus used to subsidise deficit post
Transportation and lodging while fieldwork	2000	2623	-623	Lodging and transportation costs were more expensive than we expected as it was a bit difficult to reach the site (using jeep) and also motorcycle use for mobile around back and forth from the mountain to the city to buy groceries, supplies, medicine, medical service, etc.
Living expenses while fieldwork	1000	441	+559	On other hand, food expenses while fieldwork was less expensive that we expected. The surplus used to subsidize the deficit post.
Research assistance and field guide	250	245	+5	
Documentation	50	64	-14	For the purpose of the book a professional photographer need to be used.
Communication	150	100	+50	Communication expenses also less expensive. The surplus used to subsidize the deficit post.
Book production	1000	1000	0	
Plant identification	100	100	0	
Total	5250	5223		

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

Next steps that I would consider important would include education in conservation science on Mt. Merapi. This would include approaching schools' students in Jogjakarta City and surrounding Merapi villages to be aware of their environment especially vegetation of the Merapi. Establishment of a simple herbarium somewhere near the mountain also will be very useful to introduce people, locals and visitor about flora of Mt. Merapi, and 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?

Yes, the RSGF logo was used in every presentation made for presentation with authorities and in scientific seminar, and training. The logo was also used for publication in the form of book.

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. Recently on 18th November 2013 Mt. Merapi had its small eruption, unlike the last catastrophic eruption in November 2010. This 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.