

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. 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. 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	Imanuddin
Project title	Recovering West Bali Tropical Deciduous Forest Ecosystem through Eradicating Invasive Weed and Native Tree Planting Program
RSG reference	69.02.10
Reporting period	Final Report
Amount of grant	£4,175
Your email address	imutoro@gmail.com
Date of this report	24 June 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
Eradicating invasive weed from tropical deciduous forest of West Bali national Park.			X	The project have eradicated 10 ha of forested area that invaded by Spanish Flag (<i>Lantana camara</i>) by manual up rooted method. Up rooting was done at the end of rainy season to avoid massive sprouting of seed from exposed soil. Beside eradicated spanish flag eradication of <i>Acacia nilotica</i> has been done for 2 ha of land by manually cutting by chainsaw and spreading herbicides on cut tree.
Planting and caring native tree that current population already decline			X	3000 seedlings of native tree species namely wild sapodilla, neem tree, sandal wood, white bark acacia, crocodile wood have been planted on the area that previously occupied by invasive alien species. The planted trees were the species used by wildlife as source of food such as neem tree or traditionally used by local people as part of their cultural identity (wild sapodilla and sandal wood). By choosing those kind of tree we expecte local people will keep all the planted trees grow well. During planting programme we involved local people (adult and school children) to join in. This involmnet is to promote conservation of native tree species as well as awareness regarding invasive alien species in their environment or around their home.
Study impact of invasive weed for wildlife			X	Eight line transects survey were done to understand the impact of invasive species to wildlife especially herbivore namely Javan deer (<i>Cervus timorensis</i>) and barking deer (<i>Muntiacus muntjak</i>). We use dung as indices of abundance. In the forest with high occupancy of invasive alien species, dung abundance reducing 75% compared to the forest with low occupancy of invasive alien species. High occupancy of invasive alien species made grass and plants that

				used as food not grow well. In the area that heavily invaded by invasive alien species, also show trend decreasing of species richness of butterfly compare to low occupied (7.5 species versus 17.25 species).
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2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

In 2009, La Nina occurred throughout Indonesia, which caused prolonged wet season. This natural phenomena also happened in west Bali. Our scenario to avoid mass sprouting of seed by eradicating on the rainy season did not work well. In order to maintain the goal of manual uprooting have impact, additional cleaning of uprooted has been done until all seeds were stopped from sprouting in the area we were cleared.

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

- Increasing awareness of local people around national park regarding invasive species. Although invasive alien species are considered as a national and international issue no real measure has been taken to reduce its expansion in Indonesia. This project has give valuable information for local people a knowledge regarding invasive alien species, its ecological impact and how to tackle the problem.
- Increasing awareness of local people regarding conservation of native tree species. All the planted trees are the species that beside have ecological values also have cultural value. In the past those species is very abundant in forest, but overharvesting without restocking causes declines in it's population in the forest. This project provides practical ways to increase population of native trees that in the future can be used by local people in sustainable way. We also collaborate with religious community and prominent person to get support for conserving planted tree species
- The experience of eradication of invasive alien species such as spanish flag (*Lantana camara*) in Indonesia is still lacking. Until now, although it is visible that *Lantana camara* has created ecological problems in several conservation areas, not much field work has been done to reduce its expansion.

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

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5. Are there any plans to continue this work?

Increasing awareness for local people regarding spreading of invasive alien species will be conducted in collaboration with local institutions such as national park and plant/animal quarantine. Bali as a small island is very vulnerable for invasion of alien native species. Therefore collaboration with local plant/animal quarantine is important.

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

We plan to communicate the result to West Bali National Park office to inform them regarding technique for eradicating invasive species in West Bali forest. We already have communication with similar project in Ben En National Park in Northern Vietnam that objectives to eradicate *Mimosa pigra*.

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

We received grant on August 2010 and we used the money to run the project a month after that. No cancelation or changing on the plan of the project.

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	Comment
Eradicating Invasive Weed				
Wage for daily worker	570	545	25	
transportation	380	385	-5	
gasoline for transportation	171	200	-29	
GPS	190	200	-10	
High resolution satellite image (Ikonos)	761	721	40	
Satellite image analysis	127	127	0	
Planting Native Tree Species				
Sandalwood (Santalum album) seedling	127	380	-253	we increased the number of seedlings to cover large eradicated area and as result of decreasing expenses for watering due to La Nina
Crocodile Wood Seedling	127	250	-123	
Wild Sapodilla Tree Seedling	127	250	-123	

White Bark Acacia Seedling	127	250	-123	we increased the number of seedlings to cover large eradicated area and as result of decreasing expenses for watering due to La Nina
Golden Shower Tree Seedling	127	250	-123	
Pot	317	245	72	
Water	380	250	130	
Hoe	16	16	0	
Shovel	25	25	0	
Fertilizer	317	300	17	
Bamboo for protective fence	254	300	-46	increased due to increasing number of planted trees
Drum for watering	79	50	29	decrease due to prolong rainy season
Bucket	9	9	0	
Transportation	190	150	40	
Wage for making holes for planting	63	120	-57	
Wage for watering in dry season	304	250	54	
Wage for making protective fence	158	250	-92	
Gasoline for transportation	257	175	82	
Copying document	32	32	0	
Study impact of weed for wildlife population			0	
wage for field technician	254	200	54	
binoculars	254	200	54	
field guide book	25	25	0	
Operational Cost			0	
ration for field activities	228	228	0	
TOTAL	4175	4205	-30	

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

Collaboration with plant and animal quarantine is very important to reduce possibility of wide spread of possible invasive species. In Indonesia, the main reason to refuse organism that enter Indonesia is mainly on pathological reason not ecological reason. However, based on the experience, many organisms that in the past by pathological reason is not a problem but now have ecological problem and become invasive species such as *Lantana camara* and at the moment brazilian tortoise that spreads in many rivers in Indonesia endangering the native turtoise population. So by

collaboration with plant and animal quarantine office it makes sense to reduce incoming possible invasive alien species in the future.

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?

No, since the project did not allocate fund for material production.