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	Alessandro Catenazzi
Project title	Conservation of montane forest anurans in southeastern Peru
RSG reference	10490-2
Reporting period	November 2011-November 2012
Amount of grant	£ 6000
Your email address	acatenazzi@gmail.com
Date of this report	25 November 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
Field surveys			X	We surveyed amphibian populations in June-August and October-November 2012. We exceeded our original expectations because we were able to use a 4x4 car to access a greater number of sites.
Susceptibility to Bd infection			X	We expanded the number of species from one (proposal, *P. usurpator*) to nine species. Therefore we greatly exceeded our original objective. This is one of the greatest achievements of the project, and one that is highly relevant to conservation
Climate – Bd infection interaction		X		We decided not to pursue the field experiment because (1) the susceptibility trial indicated that *P. usurpator* is not susceptible to Bd infection and (2) trials in other species highlighted species that are priorities for conservation
Bioaugmentation with skin bacteria		X		Because we did not pursue the field experiment with *P. usurpator*, we did not use the bacterium *J. lividum* for our bioaugmentation treatment. We only found this bacterium in *P. usurpator*. Instead, we isolated and cultured 225 skin microbial strains from 132 individuals of 25 frog species. We are currently testing the Bd inhibitory capacities of these bacterial strains.
Education			X	Our education activities greatly exceeded activities included in the proposal. In addition to involving school groups, we organised a field course for undergraduate students and field biologists, trained three undergraduate students, organised volunteer activities and field surveys for ecotourists and other visitors.

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

The most important limitation was not having access to a laboratory in the field. We built a "field laboratory" that allowed us to perform the experiments, but that demanded much attention to guarantee appropriate conditions for amphibian husbandry and microbiological studies. We

overcame this limitation thanks to the assistance of three undergraduate students, and by the efficient use of different rooms at the biological station.

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

1. Organization of the field course "Ecology of wildlife diseases and amphibian conservation" (June 15-22nd), attended by 14 students from Peru, the US and the UK.
2. Susceptibility trials for nine species of frogs in four families, indicating which species are most at risk from infection with the chytrid fungus. In addition to these experiments, we also re-surveyed prevalence of the pathogen at sites studied in 2008-2009 with the first RSGF grant.
3. Isolation and culture of 255 bacterial strains from the skin of 25 frog species

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

We involved local students, school groups and tourist guides in frog monitoring activities and we walked several groups through our field experiments and field lab at Wayqecha Biological Station in July and August 2012.

The local NGO Asociación para la Conservación de la Cuenca Amazónica helped in many ways including straightforward logistical help to loaning us support staff time to help find amphibians in the field and to help set up a lab in the station where we could run our infection susceptibility trials.

5. Are there any plans to continue this work?

Yes, we plan to continue this work. We feel that we made significant progress by assessing the susceptibility to chytrid infection across species and families. We can now focus our attention towards species that are most at risk of extinction. We will explore the antifungal properties of the 225 bacterial strains we isolated from the skin of 25 species of frogs. We will also continue monitoring frog populations along the elevational transect, to determine the current dynamics of Bd infection in the valley. This will allow us to identify target populations for mitigation, once we identify an appropriate bacterial strain.

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

As part of this project during 2012 we have produced the following:

- Lectures, field and lab teaching during the field course in June 2012.
- Presentations to middle school and university groups, tourist guides, and ecotourists visiting the station.
- Two published peer-reviewed articles + 1 article accepted in conservation biology and herpetology/taxonomy journals.
- Media articles (SF Chronicle, wired.com, El Comercio, Revista Viajeros, etc.).
- Rapid colour guide "Amphibians of the upper Manu National Park", in collaboration with the Field Museum of Chicago (http://fm2.fieldmuseum.org/plantguides/rcg_intro.asp).

— Invited seminar at the Museum of Vertebrate Zoology, University of California-Berkeley (+ invitation for a seminar at the University of Kansas in April 2013).
— Abstract for the Annual Meeting of the International Biogeography Society (Miami, January 2013).

We will continue to share the results of our work through scientific articles, seminars, conference presentations.

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

Funding for this project was used between May and December 2012. We had to delay the start of the project (January 2012 according to the proposal) due to teaching duties.

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
International and domestic flights	1309	2059	-750	We invited S. Flechas (Colombia) to serve as professor for the field course
Local transportation	824	824		Additional cost was covered by grant from the National Science Foundation
Lodging + food	2117	2117		Additional cost was covered by grant from the National Science Foundation
Materials	1000	1000		Covered purchase of swabs, vials for fieldwork and materials for workshop. Additional cost was covered by grant from the National Science Foundation
Salary for field assistant	750	0	+750	No local field assistant was hired for this project
Total	6000	**6000**		

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

The important next steps are to build on the valuable information we produced and connections we established in 2012. We would like to strengthen our ability to involve students in our research activities. We would also like to expand our monitoring of frog populations to lower elevations, where the impact of Bd is poorly known and where we can work closely with local middle and high school students. We see great potential in sharing our results with tourist guides, and we would like to develop short field courses for them. Research-wise, we will analyse swabs collected during our field work in 2012, analyze the results of our susceptibility trials, and publish the results in peer-review journals. An important step will be to identify which of the 255 bacterial strains offer the best hopes for managing Bd infections in the field. We will also continue monitoring frog populations and Bd infection at our study sites.

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 the flyer and website announcing the field course. Support from RSGF is listed in the acknowledgment section of published papers, and in a photographic identification guide.

11. Any other comments?

In addition to school groups, tourist guides are a great audience to communicate issues relevant for conservation. These persons are highly motivated and can communicate the findings of the project to a wider audience through their guiding activities. In the future we plan to continue including groups of tourist guides to share the results of our work.