

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 | Michael S. Roy |
| Project title | Assessment of <i>Atelopus limosus</i> population and generating habitat characteristics through Ecological Niche Modelling |
| RSG reference | 8852-1 |
| Reporting period | 11/2010-10/2011 |
| Amount of grant | £4943 |
| Your email address | michael@crea-panama.org |
| Date of this report | 13.11.2011, updated 02.04.2012 |

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 |
|--|--------------|--------------------|----------------|---|
| Profound understanding of <i>Atelopus limosus</i> , its geographical dispersion and frequency in CNR | | | X | The monitoring gave evidence of locations with <i>Atelopus</i> occurrence in CNR. The results concerning geographical position, male/female ratio and number of individuals will be compared to findings in our second monitoring phase in 2012. |
| An accurate model of <i>Atelopus</i> habitat through the ENM program | | X | | As modelling with the Maxent software programme is linked to long term ecosystem parameter measuring and requires a lot of data to effectively analyse niche requirements the gathering of related data is still going on. |
| A conservation plan targeting the essential parameters for <i>Atelopus</i> niche requirements | | | X | Direct human impacts in the reserve can be excluded, which is an important pre-condition for the protection of <i>Atelopus limosus</i> . Preventing the introduction of contaminated material that could cause the spread of Chytridiomycosis is a great concern, furthermore habitat quality of streams outside CNR should be targeted in the next step. |

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

The heavy rains at the beginning of the dry season in December 2010 and early January 2011 due to the weather phenomenon of La Niña delayed the field studies in CNR. Additionally, the masses of water completely destroyed the river banks and carried away all vegetation in a strip of approximately 10 m width along the watercourse of one stream in CNR. This site, which has formerly been inhabited by a multitude of amphibians, namely *Atelopus limosus*, has now completely changed its habitat character and needs to regenerate to its original state.

We were still able to monitor another branch of the stream which had been less affected as soon as the weather situation stabilised. With the beginning of the rainy season in late July once more we faced difficulties, as fallen trees and woody debris that had accumulated during the floods threatened to shift, which made walking in some parts of the stream extremely risky.

Atelopus frogs have been monitored during the first half of the dry season, but disappeared later in the year. We expanded the monitoring to other amphibians and took swab tests of frogs and toads at different locations in CNR in order to assess the possibility of an infection with *Batrachochytrium dendrobatidis*, the cause for Chytridiomycosis. There was no evidence of Bd in the samples, still

Chytridiomycosis can't statistically be excluded relying on this evidence and without an ongoing monitoring. A second period of *Atelopus* monitoring will be carried out in early 2012.

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

1. Biodiversity monitoring: The data of the *Atelopus* monitoring is an important part of the biodiversity mapping in CNR. This continuous project is the key to better understanding of the conservation impact of the reserve and its goal is to provide with an inventory of fauna diversity and monitor habitat changes over time.
2. Environmental education: During the project period three visiting student groups were able to witness the monitoring and actively participate after receiving instructions on the research methodology and project objectives. The students achieved a thorough understanding of the worldwide amphibian decline and of human impacts on the amphibian population. They learned about the important contributions of amphibians in ecosystems and their role in science and research through speeches, presentation of documentaries on the topic and excursions in CNR. We consider the creation of environmental awareness as paramount goal of our work and as important contribution to nature conservation.
3. Scientific collaboration: Thanks to the support of researchers from the Smithsonian Tropical Research Institute in Panama City we were able to have our samples being investigated in the institute's laboratory facilities and exchange information on the current state of research. Knowledge networks represent an important baseline for the dissemination of information and higher effectiveness of research and we greatly appreciate the successful collaboration with STRI.

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

Some members of the surrounding communities assisted the excursions along with the visiting students. The majority of people living in the villages situated near CNR were aware of the project and its study focus and shared their opinions and ideas of sites where *Atelopus limosus* frogs could be found. The value that biodiversity holds for many of the local peasants is defined by the interest it attracts in visitors and alternative livelihood opportunities it creates for them. The conservation activities of CREA strive to foster environmental awareness of the local population in order to maximise the conservation outreach and to promote sustainable livelihoods for the rural communities.

Together with one of the local community schools we organised an educational field trip to CNR. The children and their two teachers helped collecting garbage on the path crossing the forest between the village and CNR. In CNR field station they were able to learn about the role and importance of amphibians for the ecosystem and the research conducted on them in CNR.

5. Are there any plans to continue this work?

The assessment of amphibian wildlife in CNR will be carried on, as its richness and diversity is still far from being totally studied. We happily received herpetologist Twan Leenders in CNR, who did some incredible work on a field guide for the reserve and hopefully will visit soon again.

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

It is important for us to maintain the relation to STRI and invite students and researchers to benefit from the reserve as study area, our educational work with students will continue. The monitoring data will complement the CNR biodiversity map.

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

RSG was used over the period of nine months due to weather constraints. In agreement with RSGF administration we will conduct a second phase of monitoring during the dry season in 2012.

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 |
|--|-----------------|---------------|------------|----------|
| Material | 464 | 404 | +60 | |
| Transportation | 346 | 315 | +31 | |
| Accommodation | 605 | 620 | -15 | |
| Food | 2016 | 1973 | +43 | |
| Research Assistant | 1512 | 1465 | +47 | |
| TOTAL 1GBP=1,607USD | 4943 | 4777 | +166 | |
| The budget surplus will be used for processing the chytrid samples taken January- March 2012 at the STRI laboratory in Panama City | | | | |

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

While the spread of Chytridiomycosis can only be monitored and not actively combated apart from strict hygienic control of boots and equipment it is important to mitigate other harmful impacts on natural habitats of not only *Atelopus limosus*, but a multitude of flora and fauna relying on undisturbed riparian ecosystems. The conservation status of CNR will be maintained, but improving the protection of streams and rivers outside of the reserve through projects with the local communities would be a great achievement for the biodiversity situation of the area and the long term protection of water resources.

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?

RSGF has been stated as donor in all project related presentations and speeches as well as in our publications through the official CREA website.

11. Any other comments?

We appreciate the excellent communication with RSGF and their well designed website which provides with a great overview of ongoing conservation activities as well as accomplished projects.