

## The Rufford Foundation

### Final Report

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Congratulations on the completion of your project that was supported by The Rufford 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](mailto:jane@rufford.org).

Thank you for your help.

**Josh Cole, Grants Director**

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Grant Recipient Details	
Your name	Diego A. Gómez Hoyos
Project title	An integral conservation program for the Critically endangered <i>Atelopus varius</i> in La Amistad Biosphere Reserve, Costa Rica
RSG reference	21555-1
Reporting period	May 2017 to February 2018
Amount of grant	£4500
Your email address	biodiego88@gmail.com
Date of this report	March 6, 2018

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
Know about the current population status				We have estimated survival, recruitment and population growth rate: The population seems stable (no growth but no decline either).
Effect of threat factors over the population				We assessed the main threats (habitat perturbation and Bd) and their effects: Perturbation has effect over the harlequin frog's reproduction and Bd causes the detected mortality in the population.
Harlequin frog as flagship species of the local aqueduct				The local aqueduct adopted the harlequin frog as its flagship species, renewed their corporate image including amphibians in its logo and now uses the harlequin frog for environmental education activities.
Design and propose conservation actions according to the threats' effect and conservation opportunities with local communities				This objective was carried out with good success since the community itself identified the threats as well as the necessary actions to mitigate or eliminate them. They assumed the protection of the harlequin frog's habitat and are currently managing resources for the transversal courses of actions (environmental education and research).
Produce a guide-line that can be used for other amphibian conservation issues				Our experience was shared through oral presentations at three congresses: International Congress for Conservation Biology, Herpetology Latin-American Congress & Mesoamerican Congress for Conservation Biology. This objective was partially achieved since we socialized our experiences but we are still in the process of developing the guide-line.

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

Due to unusual rain, which put Costa Rica in a national red alert, we lost equipment and weather data to carry out the analysis we had planned. However, we related habitat variables and used weather data from a neighboring weather station and carried out our analysis and occupancy models, without sacrificing the objectives we had determined.

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

We now know population parameters for the harlequin frog and the effect that habitat perturbation and chytrid fungus has on them. With this we have the necessary knowledge to focus and prioritize conservation efforts for the harlequin frog in the short and medium term.

As a community initiative, conservation of the Cotón river watershed is being put in consideration. It is the harlequin frog's main habitat. They have identified two transversal courses of action: environmental education and research. Also, the leaders of this initiative are now the "Guardians of the water".

The local community-managed aqueduct adopted the harlequin frog as its flagship species and as "guardian of their water". We also renewed their institutional logo, which now includes amphibians and humans, both sharing and protecting water. Independently, they have developed environmental education initiatives and are getting ready to celebrate Water Day (16th March) using their new image and the harlequin frog to make diffusion material.

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

The local community-managed aqueduct was highly involved in the project. Through them we have achieved to get the community to know about the species during events and workshops. They have adopted the harlequin frog as their flagship species. They have also received a new institutional logo. We started the campaign "Harlequin frog, guardian of our water" in order to empower the citizens with the project and to protect their source of water as well as the frog's habitat.

The community got involved mainly in conservation of the frog's habitat. They are now developing territorial planning for the Cotón river watershed (habitat of the harlequin frog). They identified threats and actions to attend those threats. For environmental education we are currently developing an education programme together with the community, and Phoenix Zoo education experts are supporting us in the process. Regarding research, as a community initiative, we are studying which species share habitat with the harlequin frog. We are carrying this out through a citizen science pilot program with a group of local citizens, in order to find new sites where the harlequin frog and other endangered species may be found or even rediscovered.

## **5. Are there any plans to continue this work?**

This conservation programme for the harlequin frog is planned to be for the long term and our main goal is to avoid the species' extinction by elimination or mitigation of its treats and the active involvement of the local community to protect the species and its habitat sustainably in the long term.

During this Project funded by RSG, we studied population parameters, necessary to understand the population's status and current dynamics as well as to understand threats and effects. For further work on this line of action, we plan to implement management actions.

We also involved the community through the local aqueduct and the local environmental and tourism association. Some independent citizens have compromised to protect the harlequin frog and its habitat and are now guardians of water. We plan to continue supporting this initiative and follow the next necessary steps to develop a local conservation programme at the community level, including all the activities they identified to mitigate or eliminate these threats.

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

At the local level, we have socialised our results with the interested stakeholders. The local aqueduct has also allowed us to use their social networks (2500 followers) to communicate the results of this phase of the project (we are currently in process of doing this). We will also have a stand at the local fair on the Water Day celebration, where we will share our more important results (March 16, 2018) and will engage more citizens for the "guardians of the water" group.

At the national level, our results have already been shared in various ways, through media and social networks. However, over the next few weeks, after officially changing the aqueducts logo, we will do a press release.

At the regional level we have presented our results at the Latin American Herpetology Congress (Quito, Ecuador), Mesoamerican Congress for Conservation Biology (San José, Costa Rica) and at the Amphibian Disease Annual Symposium (Arizona, USA).

At the global level, our results have been presented at the International Congress for Conservation Biology (Cartagena, Colombia). Also, as outputs of this project we have submitted 2 scientific articles and 2 short-notes to journals Animal Biodiversity and Conservation, Alytes and Revista Latinoamericana de Herpetología.

## **7. Timescale: Over what period was The Rufford Foundation grant used? How does this compare to the anticipated or actual length of the project?**

Our project was carried out throughout the months we planned (May 2017 to February 2018). Although, some activities were carried out before our initial schedule and some after, all of them were finished.

This is a short term level for a conservation programme, however it is essential to plan and focus efforts in the medium (3-5 years) and long term (6-8 years).

**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
Food expenses	1400	1600	+200	We did not take into account that food expenses of non-working days were not covered by the counterpart.
Lodging	300	220	-80	Lodging had lower prices at some places or we were offered free lodging by local citizens.
Local travel	335	335	0	
Fieldwork materials & equipment	290	290	0	
Laboratory assays	1100	1168	+168	PCR kits' prices fluctuate depending on import taxes of the country.
Flagship species logo design	95	95	0	
Outreach/education activities & materials	980	790	-190	Some outreach materials were provided by the local aqueduct's administration

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

Our next steps include management actions such as habitat restoration and improving the biosecurity protocol to avoid transmission of diseases. Restoration will be performed by reforestation of perturbed areas with native trees. We will engage the community in order to carry out the reforestation as conservation events involving the local citizens.

We will continue to support and improve the community initiative "guardians of our water", since it is an emergent process from our involvement with the local community. Through this initiative, we will develop all the conservation strategies and since it is a community initiative, it will help to guarantee its success in the long term.

Regarding research, we will continue to survey the population and its threats. We will start landscape level studies to assess landscape connectivity, population viability

analysis and population genetics in order to timely implement or improve management actions in the case of drastic negative changes in population parameters.

**10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the RSGF receive any publicity during the course of your work?**

The Rufford Foundation logo was used in oral presentations of our work at three international congresses, as well as in talks done at the Phoenix Zoo and Amphibian Disease Annual Symposium in Arizona State University. The RF received publicity by appearing in printed material such as stickers, on the posters of the biosecurity protocol at the field site, as well as on scientific publications. We also plan to give a press release and it will include Rufford Foundation as one of the main funding sources of the project.

**11. Please provide a full list of all the members of your team and briefly what was their role in the project.**

**Diego A. Gómez Hoyos:** Fieldwork, data analysis, workshops with the community and reports. Design of the printed material.

**Rocío Seisdedos de Vergara:** Fieldwork, data analysis, workshops with the community and reports.

**José F. González Maya:** Science advisor

**Jan Schipper:** Science advisor, as well as

**Silvio Marchini:** Advisor for the strategies involving the community

**Gilbert Alvarado:** Laboratory manager. Helped us with PCR analysis to diagnose Bd.

**Josimar Estrella:** Helped us with the PCR analysis.

**Juan Abarca:** Helped us with PCR analysis and advised us assessing Bd as a threat.