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	George Olah
Project title	Development of novel genetic techniques for conservation studies of large macaws
RSG reference	8944-1
Reporting period	23.11.2010 – 04.04.2011
Amount of grant	£4210
Your email address	george.olah@anu.edu.au
Date of this report	1st August 2011

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
Searching for clay licks by boat for feather samples intensively in the landscape of the SE Peruvian Amazon			X	344 scarlet macaw feathers were collected in total from 28 collecting sites. We discovered new clay licks that haven't been described before and collected feather samples from sites where no collection was carried out before.
Climbing nest trees of scarlet macaws for small blood samples for DNA			X	15 scarlet macaw chicks were sampled from nests in total. Many of these nests were newly discovered in this field season.
Collecting samples from both sides of the recently built Inter-oceanic Highway			X	Thanks to the support of this grant, in this season we were able to extend the search for samples in the landscape, including both side of the highway that will provide important information on the road effect. We monitored 1061 km river system in total.
Obtaining genetic samples of scarlet macaws from the Candamo Valley			X	In this season we were able to access into the highly isolated Candamo Valley and collect samples in the first time.
Developing highly variable genetic markers for scarlet macaws		X		In collaboration with the Scarlet Macaw Genome Project at Texas A&M University we are finishing the development of microsatellite markers for our study species.
Assessing the feasibility of our novel non-invasive genetic tagging technique		X		After the field season we are processing the samples in a genetic laboratory, extracting DNA and applying genetic markers. The analyses are in progress.

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

Rainforest environment always raises some kind of difficulties for field researches. The high and continuous rainfall often made our field trips delayed, so we had to be very flexible with the dates.
During the whole season we had only one accident with the boat engine, during our first trip to the Candamo Basin. In the middle of the basin the tail of the engine crashed to a big rock below the water and a part of the tail broke inside so the engine stopped working. Nobody from the research group was hurt. Thanks to the great teamwork we paddled downriver back to the research centre

where we switched to our smaller back-up engine. In Puerto Maldonado the main engine got repaired in 5 days and we could continue with the field work.

The change of government in Peru made us facing another bureaucracy related difficulty, as exportation permits for genetic materials are delayed for an unforeseen period of time. Not to lose any precious time from our research we decided to carry out the genetic analyses of samples in Peru. We agreed in a collaboration with the Cayetano University in Lima where we can use their laboratory facilities for our lab work.

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

The three most important outcomes of this field season were:

We accessed to the Candamo Basin. The scope of natural habitats contained within this area result in spectacular biodiversity. Last year we couldn't get into the basin but this year we succeeded due to the high rainfall. This is an amazing, isolated valley in the foothills of the Andes, without any human inhabitants. First time in history we managed to get genetic samples of scarlet macaws from this basin that will have huge importance during the genetic analyses of samples from this biodiversity hotspot.

Thanks to the support of this grant we were able to monitor 1061 km river system in the SE Peruvian Amazon. This included a much bigger area compared to the first field season where we monitored 450 km of river system. We could monitor areas and collect samples from places where no scientific field research was conducted before. Our bigger study site now extended to the other side of the Inter-oceanic Highway. Comparing the samples from both side of the highway will enable us to draw conclusion of the road effect and fragmentation as human disturbances in the area.

First time this year we trapped adult macaws at their artificial nests in the vicinity of the Tambopata Research Center. For this research it is important not just sample the chicks, but also their parents as we can find their feathers in the landscape and estimate their home range, as well as their population size. Capturing adult macaws is very difficult in the wild, but with our newly developed trapping system we captured eight adult macaws and drained blood samples from them. These samples will have a high priority during the genetic analyses as we know exactly where the nests of these adults are in the landscape.

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

During the field research we were working and interacting with local communities a lot. It is very important to keep a good relationship with these people as they help us by showing us macaw nests, clay-licks and tell us how to get to those sites. In the Piedras River the Yine ethnic group (Native Communities of Monte Salvado, Puerto Nuevo, and Tipishca) gave us many feather samples that they collected in their land, where otherwise we couldn't have had access. I also gave presentations for these communities about my work and the importance of conserving the macaws in their land. Teaching these communities and their children is utterly important for the sake of conservation and future of their macaws.

My assistant (and professional boat driver) is from the Native Community of Infierno (Tambopata) from the Ese-eja ethnic group. Many other members of this community are working with me and my two main collaborators in the field, the Tambopata Macaw Project and the Rainforest Expeditions, and learning a lot about research, conservation, and sustainability.

5. Are there any plans to continue this work?

Certainly. This was the second field season of my PhD research, following by the genetic analyses and a last (third) field season in the same region. It is important to recollect samples so we can see genetic shifts and migration of the population in a 3-year time scale.

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

I'm giving oral presentation about my research for tourists in the eco-lodges in SE Peru while in the field. I will present my preliminary results in 2 upcoming conferences: Association of Avian Veterinarians (October); IX Neotropical Ornithology Congress and VIII Peruvian Ornithology Congress (November). I will write up my PhD Thesis by 2013, and high quality scientific papers in international conservation and genetics journals. Each year we need to make a report to the Peruvian National Service of Protected Areas (SERNANP - Servicio Nacional de Áreas Naturales Protegidas). I'm planning to make a documentary film of the macaws' conservation in the study area, including my research.

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

This grant was used for the second field season of my PhD research, between 23 November 2010 and 04 April 2011. I started my PhD in September 2009 and conducted the first field season between December 2009 and April 2010. We are planning the third (and last) field season between December 2011 and March 2012. After finishing the final genetic and statistical analyses I'm writing up and finish my PhD by 2013.

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
Domestic airfare inside Peru	180	230	+50	Air fare changes
Gasoline for river transportation	1000	1226	+226	Raised price of gasoline
Boat engine maintenance	330	414	+84	More maintenance costs than expected
Accommodation in towns and camps	700	680	-20	
Accommodation in the Tambopata Research Centre	600	500	-100	We spent less time in the research centre and more in the field
Food for the field	1000	865	-135	In many communities in the field we were given food for

				free of charge
New field gear	400	400	0	
Total	4210	**4315**	+105	

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

The most important next step is processing the samples collected during the last two field season. First we need to extract DNA from the feather and blood samples (avoiding the degradation of genetic material). Later we will apply the microsatellite markers specially developed for scarlet macaw to analyse the samples. It is also important to carry out one more field season so we can draw a conclusion about the migrations/shifts taking place in the time.

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?

I gave several power-point presentations for the tourist of Rainforest Expeditions (www.perunature.com) about my research in their eco-lodges in the field. I used the logo of RSGF for the special thanks part of my presentation.

During my cross-institution visit at our collaborators, the Scarlet Macaw Genome Project, at Texas A&M University last month I gave two presentations about my research, one for the Schubot Exotic Bird Health Center, and another for the Department of Vet Pathobiology, again including the logo of RSGF in the presentation.

I will also use the logo in two upcoming conferences: Association of Avian Veterinarians (October 2011) and the IX Neotropical Ornithology Congress and VIII Peruvian Ornithology Congress (November 2011).