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	Simon Tollington
Project title	A novel approach to disease management: applying immunoassays *in the field* to select immunocompetent individuals of the endangered Mauritius parakeet for future reintroduction.
RSG reference	33.06.09
Reporting period	March 2010 - December 2010
Amount of grant	£3300
Your email address	Simon.tollington@gmail.com
Date of this report	11/2/2011

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
Blood sampling of Mauritius parakeets.			✓	A total of 62 pairs successfully reared chicks during this season producing 134 fledglings. Blood samples were taken from 132 of these individuals as nestlings at ~45 days old. A further 90 samples were taken from individuals over 1 year old.
PHA immunochallenge test on Mauritius parakeet nestlings.			✓	Nestlings from 28 broods were subjected to the PHA immune challenge representing 61 individuals.
Blood sampling of Indian ring-necked parakeets as comparison 'outbred' species.			✓	Blood samples were taken from a total of 53 individuals including birds caught in a mist-net and those caught in nest boxes.
PHA immunochallenge test on Indian ring-necked parakeets.			✓	PHA immune challenge technique was carried out on 20 nestlings representing 10 broods. These numbers are lower than desired owing to many birds abandoning their nests or simply failing. This is possibly due to extended periods of rain this season.
Infection status for active PBFV confirmed via PCR.			✓	All samples of Mauritius parakeet tested for PBFV
Hemolysis-haemagglutination assay performed on nestling plasma samples		✓		Results obtained for approximately a third of samples. This laboratory-based assay needed substantial optimisation before test results were reliable. These tests will resume in 2011.
Cell counts from blood smears.		✓		All individuals sampled had blood smears made at the time of sampling. Analysis of these blood slides is time consuming and has not been completed owing to the difficulties of such processes in field conditions. These blood slides have been permanently mounted and will be examined in the near future.
Genetic confirmation of sex of parakeet		✓		This was not an objective of the original proposal. However, it has been partially completed as part of the ongoing wider

nestlings.				research objective. Assessing survival and immune function differences between sexes is therefore possible.

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

Producing high-quality blood smears in field conditions is not easy. The humidity associated with tropical conditions makes this challenging. However, methods were devised to mitigate these difficulties including the use of a cigarette lighter to dry the smears

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

- Indian ring-necked parakeets showed a significantly stronger humoral immune response than echo parakeets.
- Echo parakeet chicks which are not supplementary fed showed a significantly stronger response to PHA injection.
- The eldest chick in each brood proved to be the 'fittest' when fitness is defined by the results of the immunocompetence tests.

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

The funding provided by Rufford for this project meant that a young Mauritian fieldworker/biologist was employed to assist with all aspects of the blood sampling and bird handling. Aurelie was employed for six months and in that time learned many skills including how to extract blood from the jugular vein of live parakeets, making good quality blood smears and post collection processing of samples. Aurelie will now be responsible for the off-season monitoring of the population and will be an integral part of the five-strong management team for the next breeding season.

5. Are there any plans to continue this work?

This work will continue as part of my PhD research and releases of birds to create new populations are expected in the next year or two. Aurelie will continue to take blood samples for future analysis as part of her employment with The Mauritian Wildlife Foundation.

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

This work has already been shared with The National Parks and Conservation Services of Mauritius; the government department responsible for the management of the National Parks. It is expected that aspects of this research will also be published in peer-reviewed journals in the coming months. This project has also been shared with colleagues at the University of Kent, Durrell Institute of Conservation Ecology (DICE).

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

The RSG was used over a total of 9 months; incorporating one breeding season and part of a non-breeding season. This was approximately the anticipated duration giving the maximum opportunity to sample chicks and adults

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
6 months' salary for Aurelie Chowrimootoo	1800	1800		
Travel costs (fuel, maintenance, insurance)	600	600		
Contribution towards rent (bench fees)	360	360		
Field consumables (syringes, stains, glass slides, blood collection tubes etc)	240	240		
Lab consumables for genetic analyses (PBFD assays, genetic sexing)	300	300		
Total	3300	**3300**		

All currency transferred from Mauritian Rupees MUR50 - £1GBP

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

This recovered population of endangered parakeets now numbers over 450 birds. It is clear that although this population suffers from a disease which can be fatal it is currently not a threat to the survival of the population as a whole. Individuals do recover from infection and many others never show clinical signs despite testing positive for the active virus. The management practises employed in maintaining this population in some respects remove selection pressures from individuals i.e. providing nest boxes, supplementary food and adhering to strict protocols designed to limit the spread of disease. I feel it is important to re-establish some of these selection pressures so that the population continues to grow, recruiting the healthiest, fittest individuals. This means looking at how the provision of supplementary food is used to answer questions about the feeding ecology of individual birds and how heavily they rely on supplementary food. This resource may well be increasing the productivity of breeding pairs but there is some suggestion that those offspring have a very small chance of reaching breeding age themselves compared to those taking less or no supplementary food.

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?

The RSG logo was used in presentations to The National Parks and Conservation Services of Mauritius and University of Kent, Durrell Institute of Conservation Ecology (DICE).