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	Mariana Fasanella
Project title	Study of population structure of *Ctenomys magellanicus* (Rodentia: Ctenomyidae) in a fragmented landscape in Tierra del Fuego and their use in conservation
RSG reference	60.04.09
Reporting period	July 2009 – July 2010
Amount of grant	£6000
Your email address	marianafasanella@yahoo.com.ar; mfasanella@creg.org.ar
Date of this report	July 27th 2010

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
Collection of samples in Tierra del Fuego, Argentina			X	We collected the 20 samples from each locality that we need for the population study. Also, we update the distribution of *Ctenomys magellanicus* in the Archipelago of Tierra del Fuego.
Laboratory analysis of samples in the Lab of Molecular Ecology (DNA extraction, amplification and sequencing of mtDNA control region)			X	We extracted DNA from the 40 samples, and also the D-loop fragment was successfully amplified and finally we obtained D-loop sequences for each samples.
Microsatellites analysis of the whole set of samples		X		We would like to complete a total battery of 10 microsatellites, so we need to amplify five more microsatellites. We also need to re-amplify several samples obtained in the work period because they didn´t work on the amplification yet.
Molecular data analysis		X		We have analysed (by eye and computer software) the 40 D-loop sequences and the five microsatellites amplified, but we still need to amplify and to analyse the other new five microsatellites.

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

We still need to finish with laboratory and molecular analysis due to some difficulties in the microsatellites amplification. We buy all the 10 microsatellites primers, and we start the amplification of five, that we still have some samples to amplify because they didn´t work so well, so we keep trying in the amplification of these primers. Once we have amplified the 10 microsatellites in the 40 samples, we are going to analysed them and then we could use all the information to design a management plan for the species.

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

The main outcomes of the project will be: A) Two or three scientific publications; B) A management plan for *Ctenomys magellanicus* in Tierra del Fuego; and C) A PhD thesis.

A) This is the first study on genetic conservation of *Ctenomys magellanicus* in their southernmost area of distribution on Isla Grande de Tierra del Fuego, Argentina to be applied at the species

preservation. Results need to be published first and we are still working on them, but what we have found so far is the existence of two local populations (isolated from each other) of tuco-tuco. The two subpopulations, although they belong to the same species (until the date) they have different chromosomal number and also they didn´t share any D-loop haplotypes so, even though we still have to do some molecular and morphological analysis, we can said that these 2 subpopulations of *Ctenomys magellanicus* belong to different species. According to the data both subpopulations are chromosomal species and probably they are in a process of active speciation. If this conclusion is correct, the Tierra del Fuego tuco-tuco population could be really in threaten or in risk because the abundances of each subpopulation is smaller than we thought to be.

B) The recognition of conservation units within species is of main importance to guide management strategies. Defining meaningful Conservation Units will be useful for the species, as we could then prohibit or diminish human activities in particular areas. We will need to design or improve a management plan using genetic and ecological data. The impact of the cattle should be managed on a local scale in this region with the farmers.
C) My PhD thesis will be presented in March 2012. The thesis, in addition to being a part of my professional development, will be an important phase to transmit the results of the different stage from the project and to summarize recommendations that help to improve conservation and land-use policy in conservation of species.

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

The results from this research will be used for reports to the province regarding conservation of tuco-tuco and the interaction with the local farmers. We think that the interaction with local farmers and landowners will be difficult because the habits of tuco-tuco interfere negatively with the breeding of livestock (particularly the tucos remove the soil affecting the stability of cows and sheep).

5. Are there any plans to continue this work?

Yes. We plan to continue with this research and finish the molecular studies in this region. At the moment, another person from the lab is studying the morphological aspects in these two populations so with both morphological and molecular analysis we could conclude if these two subpopulations are in a process of active speciation or not. Also, in few months we want to make a field exploration to find the species north of this distribution. Up the moment we are exploring several evidences and personal information about the presence of this species in the continental area of Patagonia, particularly on the Santa Cruz Province. If this information is really true, the species status will change, and so the management plan.

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

At the moment, we are writing the drafts of two papers, one with the results obtained from the mtDNA sequences and the other with the update of the distribution on *Ctenomys magellanicus* in Tierra del Fuego, Argentina. We will submit the manuscript for publication in peer reviewed journals during the next months. We'll also be attending scientific meetings and conferences, to share and publish these results and the ones to come with nuclear DNA. Once we have all the results analysed and the Conservation Units identified, we will be in conditions to design a management proposal for the conservation of the species.

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

We do the fieldwork from October 2009 to February 2010 and the laboratory work start on November 2009 and still. We are still using the funds of the RSG. We have to complete the molecular analysis (amplification of microsatellites and sequencing) and finish with the research. It´s important to clarify that the project will take a bit longer than expected. We need more time to finish the molecular work at the lab and the analysis, but thanks to the Rufford Small Grants founds we have all the tools to make it real.

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.

We finally receive the grant the 7th August 2009, which were $37,750.15 Argentinean pesos (with all the bank discounts and commissions). The local exchange rate used was approximately **1£ = $6.292** (at the moment when we receive the budget).

Item	Budgeted Amount	Actual Amount	Difference	Comments
Travel 6 plane tickets Buenos Aires-Ushuaia-Buenos Aires	1000	922	+78	
Field Work Food and fuel	2295	2064	+231	
Satellite images	200	----	+200	We didn´t use it.
Laboratory works Enzyme for PCR reactions, agarose, primers, dNTPs, discardable material, etc.	400	529	-129	We use money from the satellite images for purchasing laboratory works.
Fluorescent primer for microsatellites	500	685	-185	Fluorescent primers were more expensive than we budgeted. We use money from field work.
Data Analysis Sequencing (90 mtDNA and 250 for microsatellites)	1505	1800	-295	We need to re-sequencing some samples because they didn´t work so well. We use money from field work and travel.
Specific software for satellite images	100	----	+100	We didn´t need it.
Total	**6000**	**6000**		

Finally we didn´t use satellite images or specific software (we use Google Earth maps), so the budget was redistributed specially in laboratory works (fluorescent microsatellites primers, sequencing and enzymes) because reagents change the prices (more expensive) since the date we called for the

budget until the purchase. Also we use more budgets on sequencing because sometimes the sequences were not so good, so we have to pay for another reaction until the sequence was all right.

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

The next steps are finish the laboratory works and continue with the molecular analysis. With all the data that we made, the next step is to identify conservation units for the species and to define/design a management plan for the species in Argentina. Also it will be very useful to update CITES status of *Ctenomys magellanicus* and its distribution (especially in Santa Cruz province).

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?

We haven't used the logo of the RSGF yet, but we will use it as soon as we publish the papers and present any posters with the final results at scientific conferences and meetings. We'll also acknowledge RSGF in any scientific publication of our production and my doctoral thesis.

RSGF did receive publicity from us. We recommended all the people that we know who works in conservation projects to encourage presenting a project and also in some conferences and courses that we took.

11. Any other comments?

We are very grateful for the support and confidence of RSG to our project because it was very useful for our research.