

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	Martins, Milene Moura
Project title	Conservation genetics of populations of the black-faced lion tamarins (<i>Leontopithecus caissara</i>) from Superagüi Island and mainland, Paraná, Brazil.
RSG reference	22.10.07
Reporting period	April 2008 to April 2009
Amount of grant	£3880.00
Your email address	milennemartins@terra.com.br
Date of this report	07/05/09

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
Sampling of additional individuals		x		Low rate of tree cavities as sleeping site is a serious limitation for safe capture of lion tamarins. Yet, we managed to add 8 out of 12 proposed new samples.
Definition of the genotypes of sampled individuals		x		Non-conclusive genotyping is a usual event. Yet, out of 72 genotypes (8 samples and 9 loci), we managed to determine 69, i.e., 95.8% of success.
Determination of genetic diversity of populations and the genetic divergence between them			x	
Investigation on the occurrence of genetic bottlenecks in populations			x	
Investigation of dispersal events among groups of a single population.			x	

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

The unforeseen difficulties that arose during the project were distinct between field and laboratory environment, so they are described separately. The first difficulty in the field was to undertake all six attempts to capture the animals in order to collect blood and fur samples. We were able to carry out five attempts of capture because timescale of field coordination did not match that of at least one of the veterinarians. The vets live far from the field station and it would be expensive to ask them to stay there full-time. The second difficulty was the temporal disappearance of a target group. During a previous capture of this group by the field assistants, one member of the group received the radio-transmitter, so time spent in searching for the group would be potentially minimized. However, this animal left this group one month after the radio-tagging and the remaining members were not found in the same portions of the forest they used to be observed. The field assistants looked for this group for months, but the group was found only in August 2008. Its capture was only possible in February 2009. This is mainly because this group used epiphytes and palm crowns as sleeping sites. Capture can be risky for these diurnal primates in such conditions because group members may run away and fall from tree branches. Whenever inside the tree cavity, the field assistant is able to remove the members one by one. We had no choice other than follow the group until it selected a tree cavity to sleep in, which happened in February 2009. In the laboratory, misuse of tools and equipments is not an unusual practice because many projects have been carried out simultaneously.

Some of these bad running equipments had to be replaced otherwise progression and quality of lab work would be compromised.

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

First, eight out of 12 initially planned black-faced lion tamarins were sampled. In this study, we succeeded in genotyping a total of 52 individuals, about 15% of the total population. We found a low genetic diversity for Ariri (continent) and Superagui Island populations. For example, we recorded only two to three alleles for each of the nine microsatellites markers used in the study. Low genetic diversity has been found in other studies of lion tamarins and do not call for concern, as it seems a matter of phylogenetic constraint. Despite this low diversity, there was no sign of inbreeding at Ariri and Superagui populations. Occurrence of inbreeding is expected in reduced populations. The good conservation status of the habitats where groups were sampled may one of the reasons for the funding of new groups by older offspring, which otherwise would remain in their natal group and mate with close relatives. We also found evidence that the two populations underwent a recent genetic bottleneck. Although the split of total population and its associated reduction in size after the setting of a navigation channel could be blamed at first glance, it is worth mentioning that genetic bottlenecks can also occur in the absence of a demographic bottleneck. This may happen when few breeders of one sex monopolize breeding. Reproduction in lion tamarins is usually restricted to a single pair per group. Thus, we cannot ignore the effect of the mating system.

Second, we managed to enhance the evidence that the two lion tamarin populations (Ariri at the continent and the Superagui Island) are different in terms of genetics. We supposed that the establishment and further enlargement of the navigation channel between these populations would cause genetic divergence. However, we cannot blame the channel, for differences within a single population were found. This is the case of Superagui Island population. While one group was sampled in the north part of the island, other six groups were sampled in the south/south-eastern part of this site. Because there is no physical barrier to gene flow within the island, the genetic difference between groups in the north and south/south-eastern regions may be caused by limitation in the dispersal distances of individuals that leave their natal group. As dispersers tend to form new groups nearby their natal groups, neighbouring groups are likely to present more similarities when compared to farther groups. In their ongoing evaluation of dispersal distance, the field team of the project has recorded a short dispersal distance for a young male. In conclusion, there are three different populations: two populations within Superagui Island (north and south/south-eastern) and one population in the continent (Ariri).

Third, through genetic data we identified six dispersers: two at Ariri (continent) and four at Superagui Island. Four dispersers are males and two dispersers are females. One young male had its dispersal event recorded by the field team and the genetic data added support to its disperser condition. Other two males indicated as dispersers by genetic assessment had been sampled together and, because of the unusual composition of the group (two males rather than breeding couple and offspring) they were regarded as a pair of dispersers trying to establish a new group.

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

Three local residents were employed as field assistants by the Instituto de Pesquisas Ecológicas (IPE). Their contribution in the capture of tamarins is invaluable because almost all the tree cavities where

tamarins use as sleeping sites are hard to be reach for they are high in the tree trunks. Field assistants are able to climb up some trees by using ropes and they do demonstrate inventiveness and enthusiasm. Because socio-economic circumstances prevent these people from educating themselves in order to find a job and ascend in the society, they benefit from working in the place they known better, for they were born near the forest tract where the primates live. Furthermore, friendly relationship between field assistants and biologists/veterinarians has broadened the environmental awareness of these local residents as well as that of their families.

5. Are there any plans to continue this work?

A third population of black-faced tamarins occurs on the continent. Currently, there is no data about number of groups or their spatial distribution. However, we plan to carry out population surveys in order to evaluate the real chances of captures for genetic assessment of this population.

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

Our results are of great relevance for conservation and knowledge of a threatened species. The results will be presented in the next annual meeting of the International Committee for Conservation and Management of Lion Tamarins (ICCM). The committee coordinates the population and habitat viability assessment (PHVA) for all four species of lion tamarins. Encompassing a larger sample size and a broader approach than those reported in previous genetic studies on lion tamarins, our study will contribute substantially to guide conservation endeavours. Also, our findings contribute to shed light on the level of genetic diversity, patterns of genetic divergence within and between populations, and dispersal tendencies. These results will be shared in local meetings, such as the Brazilian association of primatologists meeting to be held in September 2009. Also, we will submit our results to international journals. Local magazines will be addressed for possible spreading of the results to non-scientific audiences. We also plan to offer speeches in schools of the villages near the forest where the animals were sampled.

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

The genetic assessment of the two populations began in April 2006 and is about to be finished now in May 2009. The RSG has been used since April 2008, thus covering about 37% of the total length (in months) of the project.

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
Veterinarians' services	2904.84	1034.66	1870.18	Five out of six attempts of sampling were carried out.
Field supplies (anaesthetics, microchips)	124.11	111.23	12.88	
Field expenses (food, lodging, fuel, travelling)	851.16	572.52	278.64	Grants received from a local organization partially supported

tickets)				this item. One capture attempt was not conducted.
Laboratory supplies	0	1821.31	- 1821.31	Some laboratory supplies can only be purchased in large amounts. Old and broken equipments needed to be replaced.
TOTAL	3880.11	3539.72	340.39	

Local exchange rate used: 1£ = 3.75 reais (R\$)

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

We think that is very important to share our results in an effective way in order to make us understood by each specific audience. In a long-term perspective, we consider it essential to elaborate projects that match observational monitoring and genetic sampling of the same individuals of black-faced lion tamarins.

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?

Scientific reports were produced during the period in which RSG was used and this financial support was properly acknowledged. We also submitted a manuscript about the genetic assessment of the island to a scientific journal, which unfortunately was rejected, and we also mentioned the valuable contribution of RSG.

11. Any other comments?

We greatly appreciate the prompt RSG judgment of our proposal and thank its helpful support.