

The Rufford Foundation Final Report

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.

Thank you for your help.

Josh Cole, Grants Director

Grant Recipient Details	
Your name	Gonzalo Ossa
Project title	The next frontier for white-nose syndrome: Identifying high-risk species and high-impact management practices in South America
RSG reference	19502-1
Reporting period	April 2016 – April 2017
Amount of grant	£5000
Your email address	chalofoh@gmail.com
Date of this report	January 2017

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
Describe for the first time the characteristics of the hibernacula and hibernation behavior of <i>M. chilensis</i>				Most of the data collected on <i>Myotis</i> was in Santiago. Unfortunately, due to adverse weather conditions, we captured only one individual at the end of the fieldwork in Karukinka. The data is not sufficient to conclude that trees are hibernacula, although winter was only just ending, and the skin temperature data show extended use of torpor. Therefore, we want to say this is "partially achieved" and call the roosts "spring emergence" roosts the bats use shortly after emerging from hibernacula. It is possible that these trees are used all winter long, and will be further researched by our team.
describing the WNS-status of the bats in two locations in Chile				We found no evidence of WNS in Santiago and In Tierra del Fuego via UV light, further studies using the collected swabs will tell us a more detailed result.
Knowledge of the movements and hibernacula locations of <i>Myotis</i> species				In Karukinka, we only found bats in trees. In Santiago, most of the captured and monitored bats roost in a cliff, around 1000 m above the place where mist nets were placed. This difference reflects differences in available habitats, as large trees were not available for bats to roost in at the Santiago study location. At both locations, bats appeared to have already ended their hibernation season. More field work is needed.
Understand the ecology of other species of bats cohabiting with <i>M. chilensis</i>				We obtained relevant information on species of the genus <i>Histiotus</i> in Santiago and Tierra del Fuego. Most of the captured individuals were

				<i>Histiotus</i> in both places. We used radio transmitters to search for their roost and to obtain skin temperature data.
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2. Please explain any unforeseen difficulties that arose during the project and how these were tackled (if relevant).

We captured a lot of bats in Santiago, mostly male *Myotis chiloensis* and attached radio transmitters to search for their roost. This proved challenging as Chile is not flat, and the terrain often very difficult. It required several days of work to discover that bats roost in a cliff at 2000 m above sea level, which is impossible to get to without mountain climbing equipment. Nevertheless we accomplished some of our best work at this site.

In Karukinka, the complications were reversed; it is very difficult to capture a bat, because of the low density of individuals during emergence from hibernation. But once we captured two individuals, we found their roost and we monitored them for some days. The difficulty in Karukinka was that the climate was still cold and the bats stayed inactive. Also, the absence of caves leaves out the obvious option for looking for bat hibernacula.

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

1. No WNS evidence in central and southern Chile, using UV light, including in bats captured later in the year (from November 2016 to February 2017) in other regions in Chile. Swab samples are in analysis.
2. We found potential hibernacula in Karukinka and Santiago (trees, rock fissures, tiny "cave", and mines) to monitor in future studies. We have also mapped a number of places suitable for the capture of bats and to continue with further studies.
3. We located "spring emergence" roosts used by *Myotis chiloensis* and *Histiotus* sp., along with data on how bats regulate their body temperature during this time, which have direct implications on how WNS could be exhibited in these species.

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

5. Are there any plans to continue this work?

We are planning to search for WNS in other places, such as touristic caverns in several national parks in Patagonia (Milodon cave, Fell Caves, etc.) where many tourists from EU and the US come to visit. We want to create a protocol to prevent the infection of those sites, supervising the personnel from the national service of wildlife on how to detect the fungus in bat colonies inside the caves.

In addition, we plan to continue using transmitters to increase our knowledge about bat ecology in Patagonia and Santiago. This work will be accompanied by placing climate temperature data loggers in different types of roosts to determine if they could be suitable bat hibernacula in during the winter (T° above zero), and if they would be suitable for the growth of the WNS fungus.

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

As we found many interesting facts about the ecology of bats from Santiago and Tierra del Fuego, we will participate in different congress and Seminars, as the 2nd COLAM in El Salvador.

Also we are preparing different papers:

- A note about WNS in Chile, using the data from the collected SWABS
- Description of *Bucimex chilensis* in *Myotis chiloensis*, and range extension (Around 1300 kilometres to the south)
- Temperature regulation of bats in Santiago and Tierra del Fuego.
- Diet and ecophysiology of *Myotis* and *Histiotus* in Santiago and Tierra del Fuego

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

The field work had duration of 15 days, and now we are working on the analysis of the data. We accomplished the exact period of fieldwork anticipated on the proposal.

Furthermore, we are still collecting data as SWABs from captured bats in Chile in other projects, and collecting faeces to study the diet of the different species.

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.

Exchange rate 1£ = 951.1CLP (April 14th 2016)

Item	Budgeted Amount	Actual Amount	Difference	Comments
Flight Tickets Joseph Johnson	1000	862	+138	
Flight Tickets Thomas Lilley	1000	651	+349	

Flight Tickets Santiago Punta Arenas	583	203	+380	
Vehicle Rental (4x4)	680	388	+292	I found a very good and cheap rental
Fuel and Toll	389	93	+296	
Hotel	350	169	+181	In Santiago we stayed at Gonzalo's parents 'house.
Transfer Magellan Straight	101	32	+69	It was cheaper because we used the shorter straight (longer way by land) to go to Tierra del Fuego.
Food	583	407	+176	Most of food in Santiago was provided by Gonzalo's mother.
Radio Transmitters	1254	2641	-1387	We bought 15 radio transmitters. We didn't get the Holohill grant for them, so we derivate the extra money from Rufford to the Radio transmitters
Sika Receivers (3)	1665	7157	-5492	We bought 2 SRX800-D1 Receivers, 2 Biotracker8, and 6 antennas.
Mist Nets	694	822	-128	Gonzalo bought a lot of material to make homemade canopy mist nets which worked perfectly, and around 200m of monofilament mist nets from Ecotone
Measurement Equipment	69	0	+69	Gonzalo had all the measurement equipment
QPC reagents	173	0	+173	
Swabs	35	0	+35	We bought the SWABS before to get the Rufford SG, so we did not include it in the expenses
Austbat Harp trap	695	0	+695	We didn't buy a Harp Trap, we used that money to buy more radio transmitters
Capture Permit	7	7	0	
Other Field Materials	0	547	-547	We needed to buy all field material to avoid any risk of WNS (Rubber boots, headlamps, Overalls, Gloves) as other material (Uv torch,, 12V Batteries, Gas, Batteries, Bags, Plastic boxes for the 12V Batteries)
Total	9277	13978	-4701	

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

Visit both study sites again for an extended period of time to locate more roosts, and install temperature data loggers in roosts to determine if they could be suitable hibernacula. For the purposes of a publication, it would be important to go back at the same time of year, but to find hibernacula we could have better success in the autumn.

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?

We have still not finished preparing the data obtained in the field. However, the logo will be present on our project page on Researchgate, in the acknowledgements of any presentations and on posters and other documents.

11. Any other comments?