Final Evaluation Report

Your Details	
Full Name	Maria Gabriela Rodriguez Barrera
Project Title	Understanding the role of prairie dogs for maintaining ecosystem functions in threatened semi-arid Mexican grasslands
Application ID	27902-1
Grant Amount	4,942
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Date of this Report	May 2021

1. 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
Field work to measure plant diversity and ecosystem functions across seasons.				Field work was successfully concluded. Seasons were changed to dry season (December-February) and wet season (August – October). Dormant season is not really present in study site because it rarely snows.
Field data processing				Completed.
Laboratory field sample processing				Due to COVID-19 samples could not be analysed in Mexico and had to be imported to Germany. This process took approximately 10 months and delayed the processing initialisation.
Landscape-scale analysis and modeling				Due to time delays, landscape analyses and modelling have not been finalised but have been started.
Statistical analysis				Analyses for first PhD paper have been finalised and will be submitted at the end of May 2021.
Database about El Tokio's plant species and vegetation traits				TRY and other public access plant trait databases could not be used as they almost null information for the plant species found in El Tokio GPCA; instead, traits were looked for in scientific literature and experts. The process was very time consuming, and many species had to be removed for trait analysis (63 out of 92 species could be included). The COVID-19 situation also caused expert meetings to be more difficult.
Large set of ecosystem functions like soil carbon, soil nitrogen and water infiltration at a landscape scale.				Some of these measures were obtained on field, others will be gathered once soil sample analysis is completed.

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

1. Realising all activities on the field was more time consuming than expected and field work was longer.

2. Prairie dog sites that based on satellite images and reference points were supposed to have no prairie dogs in fact had prairie dog activity, and so new sites had to be found and vice versa.

3. Covid-19 pandemic also caused many unexpected difficulties:

   3.1 The Mexican vegetation expert I collaborated with on this, was also less available than usual, due to COVID-19 induced new online learning activities, making expert meetings more difficult to conduct.

   3.2 It had actually been agreed that some of the field samples collected would be analysed in Mexico by staff and students of Universidad Autonoma de Nuevo Leon (UANL) (for plant biomass) and IPICYT (soil for carbon-nitrogen and phosphorous measures) Due to the worsening COVID-19 situation, access to the laboratories was prohibited for students and some staff, so the analyses could not be carried out as planned. Because the COVID-19 situation was still uncertain, my supervisors and I decided to import the soil samples to Germany and analyse them in the laboratory of the Institute of Geography at TU Dresden. The resulting delay amounts to a total of 10 months compared to the original plan.

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

1. The first plant trait database of GPCA El Tokio. This will help for future vegetation projects in the area.

2. Data driven identification of grassland types within GPCA El Tokio using self-organising map (SOM), a type of artificial neural network that is trained using unsupervised learning and typically used to reduce dimensionality. Grasslands within GPCA El Tokio.

3. Scientific article regarding seasonality of plant taxonomical and functional diversity of GPCA El Tokio and the differences between sites with and without prairie dog activity will be submitted mid-May 2021.

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

Due to lack of time and the COVID-19 situation we were not able to reach out to local communities and join other NGOs in the area as stipulated in the original plan. We are planning to continue this project for multiple years, this plan will include more local community involvement.

5. Are there any plans to continue this work?

I'm still in the process of completing my PhD from which other two scientific articles related to the field work will be published.

I also plan on continuing this project for more year in order to have accurate seasonal vegetation changes that can only be achieved by monitoring the habitat for a minimum of 3 years. I have already obtained some funds through a project from the Neotropical Migratory Bird Conservation Act (NMBCA) to continue with another year of field work and plan on applying to a 2nd Rufford Small Grant to continue this work and add more local community involvement activities.

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

Scientific articles, international conferences, workshops and if possible direct meetings with the scientists of the study area and NGOs.

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

The funding August 2019- August 2020. Due to the COVID-19 pandemic and soil samples importing to Germany the project extended until May 2021.

8. Budget: 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. It is important that you retain the management accounts and all paid invoices relating to the project for at least 2 years as these may be required for inspection at our discretion.

Item	Budgeted Amount	Actual Amount	Difference	Comments
Field work and lab consumables	300	1800	+1500	Field work consumables were used but lab consumable budget was instead substituted for the import of soil to Germany.
Soil logistic and export to Germany		1200	+1200	Soil samples were supposed to be analysed in Mexico with no need to export, but due to Covid-19 and the situation in Mexico some analyses had to be done in Germany.
Field Equipment	400		-400	More money for equipment was needed but purchased through the UFZ (research centre where I'm doing my PhD)

Road Toll Payments	173	87	-86	
Food	520	145	-375	
Travel Leipzig-mty round trip (2 trips)	709		-709	Only one of the trips was purchased through the Rufford budget and the second one was purchased through the research centre I'm doing my PhD in
Fuel	1542	829	-713	Fuel efficiency logistics were implemented so that the least gas money was used.
Accommodation	1298	500	-798	Accommodation was in some cases lower and in some cases higher than expected. I tried to stay in the low-cost places as much as possible
Field wok assistance		381	+381	I had lab and field work assistance as the field was more intensive than originally thought.
TOTAL	**4942**	**4942**		

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

Long term habitat monitoring.

Due to the many grassland topographic and environmental differences within GPCA EL Tokio, more sites need to be sampled.

To me it seemed locals (adults and children) were eager to learn and participate on the activities my team and I were doing. In my opinion community involvement actions where locals get involved hands on with the scientific activities and technologies used by us (local community science/ citizen science) will be key for future conservation projects.

10. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

Acknowledgments are given on the first article and
will be given on the other two.
Poster for ESP Latin America has the logo.

The logo will also be included for all future materials and presentations related to this project.

11. Please provide a full list of all the members of your team and briefly what was their role in the project.

Main team:

TU-Dresden. **Prof. Dr. Anna Cord**: PhD Supervision and guidance in all steps of the project

UFZ. **Prof. Dr. Ingolf Kühn**: Fieldwork design, statistical help and supervision

UANL. **Dr. Irene Ruvalcaba-Ortega**: GPCA El Tokio expertise

12. Any other comments?

The COVID-19 situation presented many obstacles and delays for my project, but the Rufford Foundation was always understanding, and it was always easy to find a solution in order to continue with the project without affecting the grant agreement. I am very thankful for the patience and amazingly quick replies.