Final Evaluation Report

Your Details	
Full Name	Paula Rodriguez
Project Title	Conserving the world's southernmost forests: assessing environmental sustainability of silvopastoral systems at Tierra del Fuego, Argentina
Application ID	37549-1
Date of this Report	27th July 2023

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
Understand how management practices determine the intensity of forest use and therefore identify potential conservation compromises		■		We have made good progress yet were only able to sample 60% of the ranches proposed as study sites. Therefore, we still have fieldwork to do and data to collect in order to accomplish this goal. Moving ahead, we plan to continue data collection next year depending on the availability of funding.
Analyse the behaviour of environmental indicators in different situations of silvopastoral uses (gradient of intensity of use)		■		We have made good progress yet were only able to sample 60% of the ranches proposed as study sites. Therefore, we still have fieldwork to do and data to collect in order to accomplish this goal. Moving ahead, we plan to continue data collection next year depending on the availability of funding.
Assessment of environmental sustainability at a ranch scale. The indicators obtained will be evaluated in relation to the value of the indicators in a "model" system or desired value.	■			Comparing the timescale proposed and the one actually implemented, I recognise this goal will be able to be achieved in 2 years, since we have data to be collected, and processed (for example, soil samples take some months). Moreover, the goal implies indicator integration which requires a thorough statistical analysis of data.
Elaborate a map with the layer of environmental performance in the assessed ranches. Develop a map of the gradient of cattle use intensity based on two layers: land use pressure and environmental indicators for native forests	■			Comparing the timescale proposed and the one actually implemented, I recognise this goal will be able to be achieved in 2 years, since we have data to be collected, and processed (for example, soil samples take some months). Moreover, I should consider the time I will invest in training in Geographical Information Systems (GIS) in order to elaborate the corresponding maps.
Propose a list of environmental indicators specific for TDF as a tool for		■		We have made good progress yet were only able to sample 60% of the ranches proposed as study sites.

| innovative management practices to protect and/or restore Nothofagus forests. | | | Therefore, we still have fieldwork to do and data to collect in order to accomplish this goal. Moving ahead, we plan to continue data collection next year depending on the availability of funding. |
| Enable dialogue among social actors and spread the word on the actual policies that are held by the local government but aren't known by the local communities | | | During the last year, I have established relationships with community leaders, ranch owners, public managers, to gain access to the study sites and gather valuable information about local land-use practices. Although we haven't organised workshops or group meetings yet, we have been integrating local knowledge from different sources of information, and that is providing valuable insights. |

2. **Describe the three most important outcomes of your project.**

   a) **Understanding of management practices.** To address the first objective, related to understanding the diversity of management practices throughout the island, we carried out interviews with regional key informants (stakeholders, landowners, land managers, etc). This allowed us to understand that the island presents different coexisting realities regarding administrative, productive and biophysical factors which ultimately shape and constrain silvopastoral farming systems and their environmental sustainability. This is contrary to what was expected, since the general scheme is extensive systems, with veranda-wintering movements, based on traditional knowledge of natural grasslands. We found a strong variation of management practices on the latitudinal gradient and according to the forest type within ranches. The unequal proportions of forests categorised as high conservation value and those for production-conservation purposes along the latitudinal gradient are somewhat worrisome. This results in a strong differentiation between the northern ranches with a greater number of cattle but a lower proportion of forest under protection, and the southern ranches with fewer cattle and forests for production-conservation purposes. This could have two long-term consequences: (i) the lack of protection of the northern forest types (e.g., pure ñire forests of the ecotone area) that are not represented in the southern mountain range, and (ii) the lack of productive incentives and conflicts between the state (authority that establishes forest categories) with the owners of livestock ranches in the south. The results of this project will ultimately shed light on the impact these differences have on the environmental sustainability of ranches.

   b) **Exhaustive fieldwork and data collection.** Throughout this fieldwork season (December '22- February '23) we were able to sample +100 plots in five different ranches. In 3 weeks (distributed throughout the fieldwork season) we

travelled more than 3,500 km by car; walked more than100 km (to go from a waypoint to another) and received the collaboration of 10 persons (most of them as volunteers). By selecting ranches with silvopastoral use distributed along the latitudinal gradient of the island, we covered forest types with different biological and physical characteristics (plant diversity, humidity, topography). Although the biophysical conditions we found throughout the island were really different, cattle signs were present in almost every forest patch. The expedition to Peninsula Mitre (Estancia "Policarpo") brought immense satisfaction, considering its recent protected area status and the interest in conserving its natural resources. Despite challenging logistics, including difficult access and bureaucratic processes, favourable weather conditions enabled fruitful fieldwork. The previously unsampled forest revealed remarkable discoveries, such as diverse species and unique forest types. These findings are expected to significantly contribute to our understanding of the region's ecology and conservation implications.

c) **Community involvement.** In the first stage of my project and PhD, I am delighted with the successful networking I established with various local stakeholders, including ranchers, foresters, students and others. Through these connections, I achieved a significant level of initial community outreach. The enthusiastic engagement of the local community members, who willingly participated and shared their knowledge and experiences, played a crucial role in the project's data collection and overall success. Their valuable contributions greatly enriched the research endeavour and ensured its positive outcomes.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

One the one hand, during the course of the project, we encountered expected yet challenging difficulties arising from the harsh environmental conditions prevailing in Tierra del Fuego. The region's extreme cold temperatures and strong winds posed constant obstacles during our fieldwork. To address these challenges, we made sure to equip ourselves with suitable outdoor clothing and technical gear, ensuring that the team was well prepared for the demanding conditions. It is important to note that unlike fieldwork in other countries, our extended stays in Tierra del Fuego necessitated camping, adding further complexity to the endeavour. Despite these challenges, our thorough preparation and commitment allowed us to navigate through the difficulties and successfully conduct the fieldwork, leading to valuable data collection and meaningful insights for the project.

On the other hand, the significant inflation rate prevailing in Argentina had an adverse impact on the effectiveness of the Rufford funds, resulting in them not yielding the expected outcomes. The £6,000 grant was converted to pesos at an unfavourable exchange rate of approximately 134:1, while a more favourable rate of over 250:1 was available at the time. This, combined with the rampant inflation in the country, significantly reduced the purchasing power of the grant compared to what was initially anticipated during the application process.

However, despite the challenges posed by the exchange rate and inflation, I managed to achieve a substantial portion of my intended objectives with the funds I did receive. While the limitations were evident, I am immensely grateful for the support provided by The Rufford Foundation. Their assistance played a vital role in enabling me to carry out important aspects of the project, contributing significantly to its progress and overall success.

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

We established relationships with community leaders, ranch owners, and other stakeholders to gain access to the study sites and gather valuable information about the local land-use practices. The willingness of the local people to participate and share their knowledge and experiences contributed significantly to the project's data collection and success.

The expedition to Peninsula Mitre, a recently declared protected area, demonstrates the direct benefit of the project to local communities. By generating valuable data and insights about the region's unique forests and ecosystems, the project can contribute to the effective management and conservation of these areas, ensuring that local communities can continue to benefit from the resources while preserving them for future generations.

5. Are there any plans to continue this work?

Certainly, there are definite plans to continue this work. Firstly, as we couldn't achieve our target of sampling 10 ranches across the island, we intend to supplement the existing data by including three to five more ranches. This expansion will enhance the robustness of our results and conclusions and improve the mapping of spatial variability.

Moreover, due to the economic challenges faced in Argentina, certain analyses, such as soil laboratory analysis, were constrained by budget limitations. These analyses are essential for assessing environmental sustainability indicators. To address this, we aim to secure additional funding to conduct the necessary soil analyses and ensure a comprehensive assessment of environmental indicators.

Additionally, while outreach activities were constrained due to time and budget limitations, we recognise the importance of sharing the project's outcomes with a broader audience. Therefore, we plan to organise stakeholder workshops to disseminate the findings and engage in group discussions on sustainability topics. Seeking a subsequent Rufford grant is part of our strategy to continue the field research for this project and dedicate more focus on effective outreach activities. By pursuing these planned actions, we aim to further enrich the project's results, strengthen its impact, and effectively contribute to promoting sustainable practices and conservation efforts in the region.

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

We are planning to share the results in several ways:

(1) Our research institute (CADIC-CONICET) has a local magazine for scientific dissemination. This is called "Revista La Lupa". I have recently incorporated to the editorial committee, and I am planning not only to publish my results in the magazine, but to present the study case in one of its presentations. These magazine presentations take place in meaningful local places and are attended by diverse audience.

(2) Outreach the local community through talks in "the Science Week" organized by CADIC (link: https://cadic.conicet.gov.ar/semana-de-la-ciencia-arranco-el-cadic-en-movimiento/). This is an annual, federal initiative of the Ministry of Science, Technology and Innovation (MINCYT).

(3) Our research institute (CADIC-CONICET) organises internal conferences among their researchers. In this way, we keep track on the works others in the institute are doing. I will take advantage of this institutional space to present the results of my project to other researchers (specialists in diverse disciplines such as marine biology, forestry, agronomy, archaeology, among others).

(4) I am planning to publish an article in a peer-reviewed journal (I have started the writing, but this process takes long).

(5) I have recently carried out a short scientific visit (granted by IUFRO) to Germany, where I met plenty of early but also experienced scientists. I am part of their newsletter, so I will take this opportunity to invite them to circulate my work. This will give my project an international visibility.

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

1. Complete Fieldwork and Data Collection: The primary focus will be on finalising the fieldwork, including sampling from the additional identified ranches. This step is crucial to gather a comprehensive dataset encompassing various silvopastoral systems and environmental indicators. Rigorous data collection will provide a solid foundation for the subsequent stages of the project.

2. Sample Processing and Laboratory Analysis: With the fieldwork completed, the attention will shift towards sample processing and laboratory analysis. This essential step involves meticulously analysing collected samples, including soil, vegetation, and other relevant data points. Laboratory analysis will provide in-depth insights into crucial indicators of environmental sustainability, contributing to a comprehensive understanding of the ecosystem dynamics.

3. Summarize Results into Useful Graphs, Maps, and Practical Recommendations: Once the data is fully processed and analysed, the

project will move towards summarising the findings into meaningful visual representations. This will involve generating graphs and maps that effectively present the patterns and trends observed in the data. These visualisations will aid in conveying the project's insights to both scientific audiences and key regional actors in a clear and understandable manner.

8. 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?

Not yet, because I do not feel comfortable yet sharing my initial results formally. However, I'm already carrying out a conference work to present in The Argentine Ecology Meeting (RAE) that will be held in Bariloche, North Patagonia in October 2023. This is an important meeting since it has been carried out since 1972 (more than 50 years) and it promotes the active participation of different social actors (business representatives, governments, NGOs) in forums to discuss environmental issues, and it contributes to the protection of the country's natural heritage.

9. Provide a full list of all the members of your team and their role in the project.

Dr. Rosina Soler: thesis director, project design, field assistance and general assistance

Dra. Silvina Romano: thesis co-director, project design, stakeholder liaison.

Dr. Gimena Bustamante: field assistance and data analysis assistance

Mathew Ruggirello: field assistance and data analysis assistance

Francisco Mattenet: field assistance

Cecilia Gutierrez: field assistance

Ana Tibautin: field assistance

Jimena Chaves: field assistance

Angeles de la Peña: field assistance

10. Any other comments?

I wish to convey my sincere gratitude to The Rufford Foundation for their invaluable support, which has been instrumental in making this project a success. I am excited about the prospects of continuing my research endeavors in the future, further exploring the realms of conservation and sustainability, with the unwavering backing of the foundation.