Final Evaluation Report

Your Details	
Full Name	Matthew Ruggirello
Project Title	Wildfire at the End of the World II: Informing and coordinating community restoration and conservation of the sub-Antarctic beech forests of Tierra del Fuego
Application ID	38999-2
Date of this Report	1/4/24

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
1) Evaluate the impacts of old (1930-1980) and recent (2005 onwards) forest fires on the regeneration and spatial distribution of ñire and lenga.				Objectives 1 – 5 were completed and shared with the broader community through two articles that were published in peer-review journals, numerous presentations at international conferences, and presentations to the local community.
2) Understand how topography, post-fire remnant forest structures, and fire severity influence the health and vigour of ñire and lenga stands.				
3) Experimentally analyse possible limitations on natural regeneration from seeds and evaluate the response of seedlings of both species to fire by monitoring morphological (e.g., height, biomass) and physiological (e.g., leaf area) traits.				
4) Compare the response and survival of the two species and identify through a field experiment the exact conditions that favour the recovery and protection of these two species.				
5) Propose practical techniques and tools to protect and restore ñire and lenga forests.				

6) Disseminate a field fire-severity guide and information on how fire threatens these fragile ecosystems to the broader community and the role local volunteers, government, and industry can play in forest conservation and restoration and lead local volunteers in restoring burned areas.				We have disseminated a great amount of information to the local community through this project. However, the creation of a field-severity guide is still in progress and will require additional field data collection to ensure its accuracy.

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

a). Articles published in peer-review journals:

Ruggirello, Matthew Joseph; Bustamante, Gimena N; Soler, Rosina M. **Nothofagus pumilio regeneration failure following wildfire in the sub-Antarctic forests of Tierra del Fuego, Argentina**. *Forestry*. Null: Oxford Univ Press. 2023 vol. n°. p1 - 10. issn 0015-752X.

Matthew Joseph Ruggirello; Gimena Bustamante; Peter Fule; Rosina Soler. **Drivers of post-fire Nothofagus antarctica forest recovery in Tierra del Fuego, Argentina**. *Frontiers in Ecology*

b). Presentations at conferences:

Matthew Joseph Ruggirello; Rosina Soler; Gimena Bustamante; Vanessa Lencinas	Setting Restoration Priorities for Burned Nothofagus Forests In Tierra Del Fuego, Argentina: Impact of Distance from Fire Boundary and Remnant Live Trees on Seedling and Sapling Regeneration	64th Annual Symposium of International Association for Vegetation Science
Matthew Joseph Ruggirello; Rosina Soler; Gimena Bustamante; Paulina Rodriguez	Setting Restoration Priorities for Burned Nothofagus Forests in Tierra del Fuego, Argentina: Impact of Fire Severity on Soil Properties and Seedling Growth and Survival	International Association for Ecology: 13th International Congress of Ecology.
Matthew Joseph Ruggirello; Rosina Soler; Gimena Bustamante; Vanessa Lencinas	Setting Restoration Priorities For Burned Nothofagus Forests: Impacts Of Wildfire On Microsite Abundance	International Association for Ecology: 13th International Congress of Ecology.
Matthew Joseph Ruggirello; Gimena Bustamante; Peter Fulé; Rosina Soler	Determining burn severity and its impact on post fire regeneration in the Nothofagus forests of Tierra del Fuego, Argentina	8th International Wildland Fire Conference
Matthew Joseph	Experimental post fire restoration	8th International Wildland Fire

Ruggirello; Gimena Bustamante; Peter Fulé; Rosina Soler	of *Nothofagus pumilio* and *N. antarctica* forests in Tierra del Fuego, Argentina	Conference
Matthew Joseph Ruggirello; Gimena Bustamante; Paula Rodriguez; Peter Fulé; Rosina Soler	Cambios en el suelo post-fuego afectan plántulas de Nothofagus en Patagonia Sur	XXX Reunión Argentina De Ecología.
Matthew Joseph Ruggirello; Gimena Bustamante; Paula Rodriguez; Veronica Cruz Alonso; Rosina Soler	Una revisión de la recuperación forestal tras los incendios en latitudes altas	XXX Reunión Argentina De Ecología.
Matthew Joseph Ruggirello; Gimena Bustamante; Peter Fulé; Rosina Soler	Exploring alternative techniques for restoring burned Nothofagus forests in Tierra del Fuego, Argentina: analyzing the viability of restoration from seed	10th World Conference on Ecological Restoration

c). Outreach to the local community: including two articles published in the local community magazine for popular diffusion of scientific findings, and numerous presentations to the local community on the ecological consequences of wildfire in the region and the need for active restoration of burned forests.

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

The field work portion of the project went relatively smoothly. Unfortunately, many of the seeds that were sown in our restoration experiment did not germinate because of the dry spring that followed their sowing. Also, the rampant inflation in Argentina made it so that Rufford funds did not accomplish as much as I had hoped. Still, I was able to accomplish much of what I hoped with the funds I did receive and remain extremely grateful for the assistance The Rufford Foundation provided.

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

I employed several local assistants over the 1st year of my project to help with field data collection. Several university students have also gained valuable experience and exposure to environmental research, as they have helped me with different parts of the project as well. I co-hosted a field tour of burned areas with a group of high school students and their teachers. Students that attended the field tour will bring valuable lessons back to their classrooms and I hope to organise planting events with them and their teachers in the months and years to come.
I also spoke at the event "Nuestra Ushuaia," which brought local fire experts together to speak to the local community on fire-related topics and I have appeared on local television and radio to speak about my project and its outcomes.

5. Are there any plans to continue this work?

At this time, there is not. I will be leaving my research station in April 2024 to work in private land management. The change in government in Argentina has made it so that remaining in science is no longer possible.

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

Please see answer under 2a and 2b. I have been very active in the scientific and general community in sharing the results of my work.

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

Unfortunately, due to the economic situation in the country and the lack of support for science and conservation I cannot continue to work in this topic. I am nearing the completion of my PhD and plan to finish it. However, I will only be able to return to work in science if research conditions improve. Rufford support was instrumental to conducting the field work necessary to complete my doctorate and Rufford funds were essential in filling the gap between my local PhD funding and the funds actually needed to conduct research with a heavy field component.

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?

Yes. Please see publications listed in section two. These works and more are listed on my Research Gate profile: https://www.researchgate.net/profile/Matthew-Ruggirello. I was always sure to include the Rufford logo and give proper credit in publications and presentations.

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

Rosina Soler: thesis director, project design, field assistance, general assistance, diffusion of information.

Ana Tibaudin: field assistance.

Ale Tibaudin: field assistance.

Fran Mattenet: field assistance, publicity/diffusion.

Augustin Ceravolo: field and lab assistance.

Pauli Rodriguez: field assistance.

Gimena Bustamante: field and lab assistance.

Peter Fule: project design and support.

Santiago Favoretti: field contact, research site host, private forestry rep.

Jorge Sevillano: private rancher, research site host, field support.

Martin Parodi: provincial forester, research site contact, field and technical support.

10. Any other comments?

I am very grateful for the support of The Rufford Foundation over these last 2+ years.