

## Final Evaluation Report

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Your Details	
<b>Full Name</b>	Elizabeth Melgarejo Estrada
<b>Project Title</b>	Science and traditional knowledge as allies for the conservation of Agaricales fungi of the Bolivian Yungas: applications for the local benefit
<b>Application ID</b>	26881-1
<b>Grant Amount</b>	£5,000
<b>Email Address</b>	melgarejoe.e@gmail.com
<b>Date of this Report</b>	March, 31

**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
Generate information about fungi diversity in the Yungas of Bolivia				During the project, 86 species of Agaricales were recorded, increasing scientific knowledge from four to 90 species for the region; also, the results increased knowledge on the distribution of many species.
Increase the scientific collections of the Herbario del Oriente Boliviano (USZ)				The collection of the USZ increased from approximately five to 350 sample collections of Agaricales fungi from the Yungas.
Generate information about ethnomycology of the "Sindicato Agrario Santa Isabel", a Quechua community.				Ethnomycological knowledge was compiled focussing on the uses, names and ecological knowledge of nine wild useful species of fungi. We are preparing a bilingual book with this information and a scientific article with the ethnomycological results.
Identify threats to fungi and threatened areas where fungi grow				By field observations and conversations with local people, we collected information about threats and potential threats to the fungi and the forests.
Promoting education and awareness about Bolivian Yungas fungal diversity and conservation among local people				Fungi talks were held at school and high school; we shared the information about local diversity of fungi, highlighting the importance of fungi in the forest and in daily life of local people. We elaborated flyers, scientific publications, reports and video media for the local people and the scientific community. We could perceive an increase of enthusiasm of local people in the conservation and research process.
Workshop of edible mushroom cultivation				A mushroom cultivation workshop was carried out for two species: one local species and one commercial species.
Coaching and training about students				Research assistants were able to gather experience and skills as interviewers

inventories methods in mycology and ethnomycology				and in methods of collection and preservation of fungi.
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**2. Please explain any unforeseen difficulties that arose during the project and how these were tackled.**

The health emergency due to COVID-19 did not allow the realisation of the workshop to cultivate edible mushrooms and the checking of part of the ethnomycological information previously compiled. Each activity was done successfully during February and March 2022.

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

- I. The scientific knowledge about fungal diversity for the Yungas region increased with this project from four to 90 species, including 17 new records and 12 candidates to new species. This reaffirms that the Yungas is one of the top biodiversity hotspots for conservation priorities in the planet.
- II. For the first time in Bolivia, a bilingual book regarding useful mushrooms by Quechua people of the Yungas region will be published, showing the local knowledge and cultural importance of fungi.
- III. After this project, local people, the scientific community, research assistants and park rangers have increased their knowledge on Agaricales fungi, and information about biological and cultural importance of fungi of the Yungas del Ichilo has been compiled.

**4. What do you consider to be the most significant achievement of this work?**

The most significant achievement of this work was to contribute to the awareness of the academic student community about the world of fungi and their cultural and biological importance, uniting scientific and local knowledge.

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

At the beginning of the project, community members believed that they knew very little about mushrooms. When we shared the compiled information gathered during expeditions and interviews, they were surprised about the amount, quality and diversity of knowledge that they have.

Based on this information, we provided a cultivation workshop, including an edible local species and a commercial species. This activity represents a possible meat alternative and/or a commercial activity to improve their economic situation.

Some adults and children showed great interest and enthusiasm in teaching and learning from each other during the interviews as local guides.

The school community has also expressed interest in our research, and the team has invited us to give talks about fungi in two opportunities. Teachers and students collaborated with the investigation compiling some local recipes with mushrooms inside their families.

#### **6. Are there any plans to continue this work?**

Yes. We plan to continue with another project to perform taxonomic and phylogenetic studies to identify rare species that were registered in the field. We are also planning to extend the study area, as knowledge of the diversity of fungi is important to protect them and the forests.

Also, we look forward to train high school students to start producing spawn. Mushroom seed is essential to give independence and empowering to the community in local mushroom production. Knowledge about the production of spawn exists, but it is necessary to establish a local mushrooms farm building and provide accessible equipment for mushrooms cultivation. We will propose workshops on mushroom cultivation as additional food or source of income for the local communities. This experience will be pilot, with the projection of expanding this experience to the remaining villages in order to create around the National Park Carrasco a belt of local communities that are aware of the biological and cultural importance of fungi and using them for their benefit while contributing to preserve the forests.

#### **7. How do you plan to share the results of your work with others?**

The results of this work have already been shared with the local authorities and school community of the "Sindicato Agrario Santa Isabel".

They were also shared in my personal and institutional social networks.

Now, three papers are published, and we are writing a bilingual book and an ethnomycological paper.

The results of the project are going to be presented in the V Bolivian Congress of Ecology and we expect to share the results with the park rangers and executive director of the Carrasco National Park as soon as we can.

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

The Rufford grant was used for 3 years (February 2019-February 2022). Unfortunately, we spent twice the time we anticipated, due to the pandemic situation.

**9. 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
Raising workshop and materials	200	200		
DNA extraction kit	500	480	-20	Item exchanged for a round trip air ticket for the last field trip
Material to collect fungi	80	80		Item paid with national funds for scientific research grants to PhD B. Lechner
Laboratory material	500	500		Item paid with national funds for scientific research grants to PhD B. Lechner
Local guides	100	100		
Book printing and edition costs	600	600		In process to be printed
Food and accommodation	2900	2900		
Rent vehicle for field trips	700	850	+150	Extra days were required to the field trip Difference provided by personal funds
<b>TOTAL</b>	<b>5000</b>	<b>5710</b>	<b>130</b>	<b>10 GBP= 1418, 73 ARS</b> <b>10 GBP= 89,31 BOB</b>

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

- The results of this study could serve as a starting point for the development of management plans for fungi and forests conservation.
- To initiate an environmental education campaign, aimed at the schools of the Carrasco PN, to explain to them why the fungi are important and share information about their ecological and cultural situation and importance.
- To continue working with actors related to the education and to train students in mycological and ethnomycological research.

**11. 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, all material for dissemination produced in this project had the RF logo. The logo was displayed on every public presentation, video media produced by the team ([https://www.youtube.com/watch?v=XDgnwSkXzt4&ab\\_channel=INMIBOInstitutoUBACONICET](https://www.youtube.com/watch?v=XDgnwSkXzt4&ab_channel=INMIBOInstitutoUBACONICET)) and we will continue to do this in future presentations and video media. Also, we mentioned The Rufford Foundation in the acknowledgements in each published paper.

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

<b>FULL LIST OF ALL MEMBERS OF OUR TEAM AND THEIR ROLE IN THE PROJECT</b>	
<b>Team</b>	<b>Role in the project</b>
PhD. Bernardo E. Lechner	Research advisor (mycologist)
PhD. María Eugenia Suárez	Research advisor (ethnobiologist)
Gregorio Cordova	Park Ranger staff from Carrasco PN
Bladimir Marca	Park Ranger staff from Carrasco PN
Maribel Ibarra Merida	Agent of ethnomycological study, co-trainer in mushroom cultivation
Andrés Coágula	Research assistant
Carol Almendras	Research assistant
Mónica Cervantes	Research assistant
Nayara Choque	Research assistant

**13. Any other comments?**

We are extremely grateful to The Rufford Foundation for making this project a reality. It was a truly rewarding experience to conduct my fieldwork in Bolivia, and I hope that the results from my research will contribute to show the importance of mycological and ethnomycological research, as well as to fungi and forests conservation.