

Project Update: May 2019

1. Summary

I started field work in the first half of January 2019, with the goal of land recognition and identification of local areas of study inside the Yungas. I also made the first approach to the local community, and introduced to them the purposes and general idea of the project during a bilingual (Quechua-Spanish) meeting (video 1) previously planned, where I obtained prior informed consent of the local authorities and the community. In general, the project was well received (figure 1, 2), attracting the attention mainly of older adults and women wanting to be trained in the field of mushroom cultivation.

On the other hand, negotiations were also made with the official administrative authorities to obtain the permits for collection and entry into the national park. They showed interest in knowing the fungi of the park and in the proposed future training.

My field experience was increased and together with a training graduate student (figure 3), we were able to document the presence of almost 140 fungi in the study area (60 in the Basimontano Yungas and 80 in the cloud forest of Yungas), of which 8 species were possible new records or new species, hence they were prepared for DNA extraction. Three local strains were isolated successfully.

Two uses of wild mushrooms (*Auricularia* sp., *Suillus* sp.) were quickly documented for the edible category within the framework of the meeting.

2. Objectives

- Start field work in Bolivia and manage permissions with local and administrative authorities and establish links with an institution that will provide mycelium to the community in the future.
- Conduct a first prospect for the knowledge of mushroom diversity and the richness of knowledge of the community.

2.1. Field work

Fieldwork was carried out in Carrasco National Park (figure 4), specifically in Villa Tunari (17° 44' 50 "W, 63 38 '23" S), Incachaca (17° 14 '18.5 "W, 65° 81' 30.2 " S) and Colomi (17° 11' 37 " W, 65° 51 '55' ' S). And was carried out in the cloud forests of the Yungas (figure 5) and the Basimontano floor (figure 6).

Despite the saturated soils in the heart of the Basimontano floor, in Villa Tunari, we managed to collect 60 records of fungi. Among them there are new records for the country (figure 7) and some possible new species. For the cloud forests we collected 80 records of fungi, with possible new records (figure 8) and a possible new species.

It was a successful campaign (figures 9, 10) and we are very satisfied with the achieved objectives. Actually, 140 records of fungi for a first survey is more than we expected for the first fieldwork. Despite this and moreover, we think that there are more possibilities to document other fungi that appear in seasons of less rainfall and when the soils are not

saturated with water. This is why we decided to conduct a survey in October 2018. In this way, we will have a broader idea of the diversity of fungi present and available for the community in the PNC along the year.

On the other hand, and as part of the fieldwork, the presentation of the bilingual doctoral project (Spanish-Quechua) was made to the community "Sindicato Agrario Santa Isabel", the objectives, scope and schedule of activities were raised.

The project in general was well received, especially by women willing to learn to cultivate wild mushrooms as an economic and nutritional sustenance; and by seniors who immediately shared their traditional knowledge at the meeting.

3. Accomplishments

Until now, 10 species were identified: *Auricularia* sp., *Campanella alba*, *Marasmius cf. cladophyllus*, *Cookeia speciosa*, *Mycena cf. polygramma*, *Mycena cf. cyanocephala*, *Mycena cf. chusqueophila*, *Mycena polytricha*, *Marasmius haematocephalus* and *Suillus luteus*.

Two categories of use for *Auricularia* sp. and *Suillus* sp. were quickly documented for the edible category as well as the vernacular names (*Ningri* and *K'allampa de pinu* respectively) for the wild mushrooms in the framework of the meeting.

The informed consent was obtained signed by the maximum local authority of the community "Sindicato Agrario Santa Isabel" in April 2019.

The administrative board of the Carrasco National Park committed to guarantee the accompaniment and involve the park ranger's team of the section in the future awareness workshop.

Currently we are in negotiations with Milenka Velasco, director of the LIMAB, a biotechnology unit dependent on the Universidad Autónoma Gabriel René Moreno (UAGRM) for the creation of a mycology section and a strain collection, which can guarantee the provision of mycelium to the community of Santa Isabel.

4. Problems and assistance needed

In general, the project is progressing very well, despite the inconveniences that we have decided to solve in future prospectations.

This is one of the first projects with the aim of documenting fungal richness in the study area. We face a lot of work, from the academic point of view, and it represents a challenge for the Bolivian institutions that support this project. One of the challenges for the Museo de Historia Natural Noel Kempff Mercado (MHNNKM) is formally establish a mycology section, in order to receive the collections that derive from this project. In this field prospectation it was not possible to work in coordination with more than one park ranger, because the personnel was in training and attending other issues that concern the order and regulations of the Carrasco NP. In the next prospectations, we hope to have

at least two park rangers trained in the field. We consider it important to participate in the field work in addition to their participation in the workshops that we have planned to carry out later.

Finally, we had complications when the mushrooms were dehydrated, because the humidity and the rains made the process very difficult. To correct this complication, we will use dehydrators with greater power.

Figures: All photographs were taken by Elizabeth Melgarejo Estrada (except the figures 1, 2, 10b) which were taken by Maribel Ibarra Mérida.



Figure 1: Beginning the bilingual meeting with local community (02/03/19).



Figure 2: With Yungueño women, after meeting (02/03/19).



Figure 3: Maribel Ibarra processing the fungi samples.



Figure 4: The Carrasco NP.



Figure 5: Cloud Forest of Yungas landscape (27/02/19)



Figure 6: Maribel Ibarra walking in the Yungas Basimontano landscape (28/02/19)



Figure 7: Potential new records fungi of the Basimontano Yungas. *Mycena* sp. (left), Cf. *Anellaria* sp. (right). (24/01/19, 25/01/19).



Figure 8: Potential news records of the Cloud Forest of Yungas. (26/02/19, 02/03/19).



Figure 9: After field, processing samples: Maribel Ibarra-Mérida, graduate student (left), Elizabeth Melgarejo Estrada, doctoral student (right) (28/02/19).



Figure 10: Processing samples (left), Elizabeth Melgarejo Estrada, working in the field (right)