

## Project Update: October 2020

### Introduction

In this report we inform about progress we have achieved regarding research, including field and lab work. In this first stage the project has suffered some delays due to the effects of COVID19 sanitary crisis in Chile. However, during September 2020 quarantine and travel prohibition measures were partially lifted, allowing restricted displacements, enough for us resumed our research.

### 1- Microenvironment conditions determination

During the summer of 2020 (January) we visited the sites: Cuesta Zapata ( $33^{\circ}23'18''\text{S}$   $71^{\circ}14'59''\text{W}$ ) and Quintay ( $33^{\circ}11'49.9''\text{S}$   $71^{\circ}41'31.6''\text{W}$ ), unfortunately this time we found a situation of serious drought followed by a series of forest fires that affected the entire region especially in eucalyptus plantations. Therefore, it was not possible to make significant progress at that time. Moreover, COVID19 pandemic started in March 2020 in our country affecting transportation changes due to quarantine measures. We resumed work in September 2020, at the beginning of spring season, when we were able to move again, accompanied by health passports, due to the partial relaxation of the sanitary restrictions. We visited three sites; Cuesta Zapata ( $33^{\circ}23'18''\text{S}$   $71^{\circ}14'59''\text{W}$ ), Lago Peñuelas ( $33^{\circ}08'50''\text{S}$   $71^{\circ}28'35''\text{W}$ ) and Lo Orosco ( $33^{\circ}13'29.4''\text{S}$   $71^{\circ}21'58.0''\text{W}$ ). We installed data loggers in the litter to measure temperature and humidity in each of the habitat types (eucalyptus plantation and sclerophyllous Forest) in the three sites. Additionally, we are carrying out an *in-situ* decomposition study, to evaluate the effect of the change in land use (from native forest to eucalyptus plantation) on the decay rates of litter and the role of cockroaches (Figure 1).



Figure 1. Plastic mesh bags for leaf litter of two different opening sizes. Installed dataloggers are marked with a red circle.

In order to study the microbiota of the leaf litter and the cockroaches' gut, we collected cockroach specimens and leaf litter, in eucalyptus plantation and sclerophyllous forest with 10 sampling points per location (Figure 2 and 3).



Figure 3: Native cockroach in forest leaf litter (Lago Peñuelas, September 2020). Figure 4: Constanza Schapheer collecting leaf litter. (Cuesta Zapata, September 2020)

## 2- Microbiota study

From our early spring fieldwork, we obtained enough specimens from which are currently dissecting their digestive system, to obtain cockroach hindgut samples (Figure 5). During the October and November 2020, we will do the DNA extraction work in the laboratory, from insect hindgut and leaf litter to complete the objectives proposed in our project.

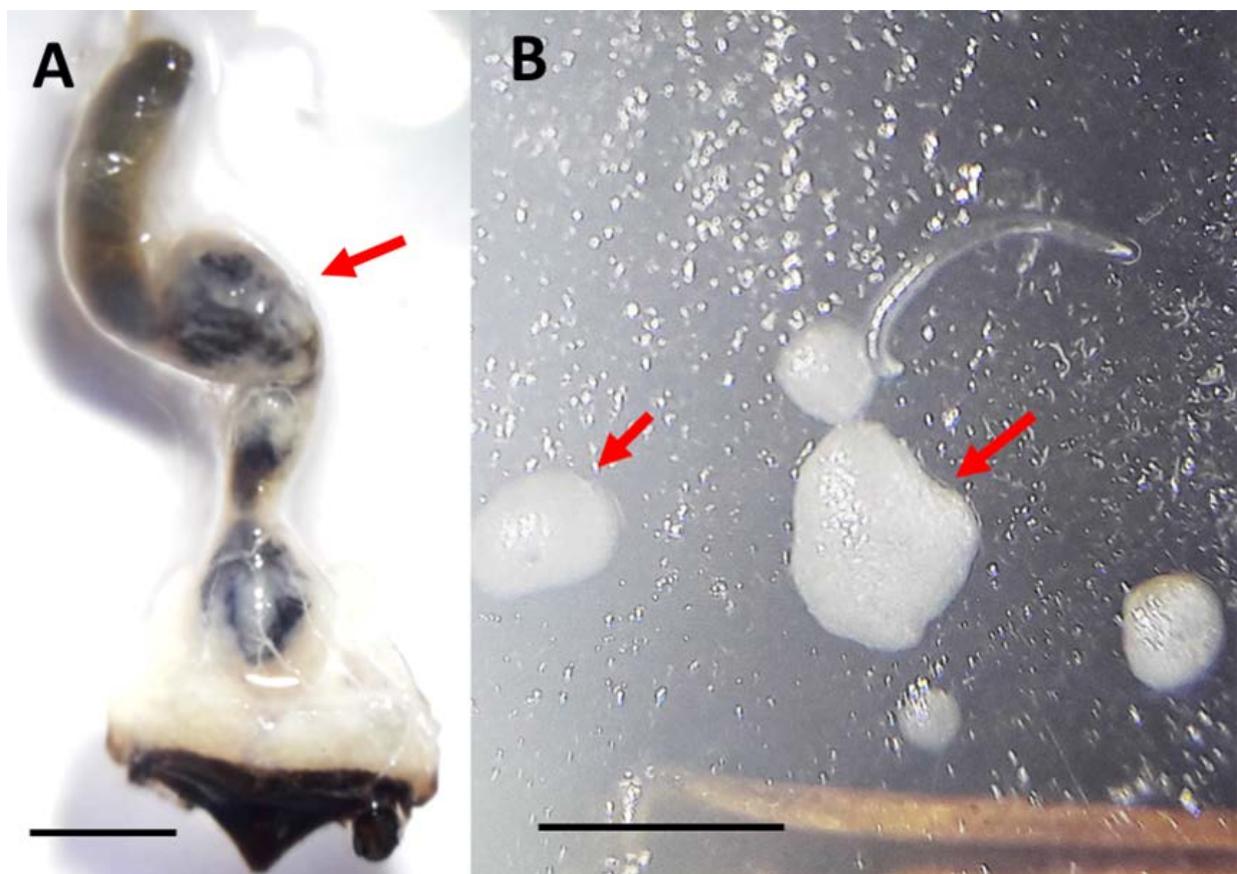


Figure 5: Microbiota. A. cockroach's hindgut (scale=2mm) B. microorganisms' colonies on sclerophyllous forest's leaf litter (scale=5mm).