Project Update: April 2016

Introduction

In this report we detail the progress made in the project. Generally the work has been performed without major problems. We obtained distribution data in field that will allow us to meet the other objectives. With respect to outreach objectives, we had a very good reception with people who knew nothing about cockroaches.

1) Conservation Status Assessment

Between September and November 2015 we sampled cockroaches and plants at sites corresponding to the northernmost extreme of our focus species distribution (Pichidangui, Los Molles, Pullally and Papudo) (Figure 1 and 2). Unfortunately, we also have seen that progress of construction along the coastline continues (Figure 3).

We were able to verify our hypothesis: native cockroaches are indeed associated with native plants along the coastline. Even more, most of these native plant hosts are also endemic and some are considered in danger by different categories such as Lúcumo Chileno o Pouteria *splendens* (Sapotaceae). During our nightly observations we confirm that native cockroaches consume their floral resources and apparently do not cause direct harm by herbivory (Figure 1). A good news it is that we did not find pest cosmopolitan cockroaches species in wild places.

Figure 1: *Moluchia brevipennis* in *Puya´s* flower, probably feeding floral resources. (November, 2015)

Figure 2: Constanza georeferencing a rural sampling site at Papudo. (October, 2015)

Figure 3: construction of buildings over a wetland, Papudo. (October, 2015)

We kept some insects in laboratory conditions and we reared them until obtaining adulthood, currently, we are analysing their morphology in order to determine if populations are different species (based on morphological characters of the genitalia in males). Simultaneously we are doing the identification of plants collected in the sampling points.

The climatic condition in Chile in 2015 was strange. There were also late rains and on October 8th 2015 a tsunami that hit important part of the coastline of the central zone. It is for this reason that we decided sampling sites further south we will do this year between in the months of September and December 2016.

2) Outreach

For outreach proposes we have created a fantasy name, which it is inspired by the *Moluchia* genus. As *Moluchia* is pronounced in Latin as the sound would correspond to "k" in Spanish we labelled "Molukia" to the brand fantasy name. We have also incorporated the phrase "Pequeños guardianes del Litoral" ("Little guardians of Coastline") as a under title referring to the importance of these insects to the coastline ecosystem. The logo correspond to a stylised image of a cockroach inspired by the designs of Mapuche culture (native people from central-south Chile) (Figure 4). Based on these, we have developed our educational materials and brochures of the project (Figure 5).

Figure 4: Proyecto Molukia´s logo

Figure 5: Project´s flyers example.

a) Facebook FanPage

We created a Facebook fanpage (www.facebook.com/proyectomolukia) (Figure 6). Where we have made spreading the problem of the destruction of Mediterranean matorral. We have also made flyers for be distributed online and printed. Where the importance of maintaining native plants in the region is explained (Figure 5).

Figure 6: Cover Facebook fanpage

b) Website

In addition to the Facebook site, we create a website (www.molukia.cl), where you can find information of native cockroach, the team and download teaching materials (colouring sheets). This information is available in English and Spanish. This site also contains links to our fan page, YouTube channel and contact information.

Figure 6: Proyecto Molukia´s Homepage

c) Outreach Activities

We have focused our outreach activities in local schools neighbourhood councils and museums especially near the habitat of our study organisms, in order to have an impact on the local communities in contact to these insects. In these activities we teach people about

the importance of native cockroaches to the wild ecosystem. Additionally we provided them with didactic materials and conduct recreational activities.

i) **Los Molles School (V region, Los Molles locality. October, 2015):** This time we work with children (of different ages 6 to 12 years old) (Figure 7) of a rural school. It was an excellent experience, children were very interested by insects. We work in collaboration with a local NGO (Guanay) and Protege Los Molles conservation initiatives.

Figure 7: Colegio Los Molles´s Children

ii) **"Conociendo a los Pequeños Guardianes del Litoral" (V region, San Antonio. October, 2015):** In the context of the activity "1000 Científicos 1000 Aulas" (1000 Scientists 1000 Classrooms) which it aims to bring scientists to the classrooms of schools organized by EXPLORA program of CONICYT (the national commission of science and technology). We create the talk "Knowing the Little Guardians of the Coastline". We work with children 9 years old. They painted sheets with native plants and cockroaches. Additionally we show live insects (Figure 8).

Figure 8: 1000 Científicos 1000 Aulas activites

iii) **Metropolitan University of Educational Sciences (VI region, Graneros. September, 2015):** In this activity we worked with teenagers (14-17 years old) and we used cockroaches as model for integrative science teaching. For example we integrate contents of physics and biology, in an exercise where students must calculate speed with data obtained from the observation of a cockroach race. With this, we got teenagers to develop empathy for these insects (Figure 9).

Figure 9: Integrative science

iv) **Caminatas Educativas "Conociendo y Valorando la Biodiversidad de la Quebrada de Córdova" (V region, El Tabo. November, 2015):** We collaborated with CODECIAM (local NGO) in an activity called "Knowing and Valorating Biodiversity of Cordova´s Ravine. This activity was an educational walk through a nature sanctuary called Quebrada de Cordova (Cordova´s Ravine). We guided this walk and explained participants about the importance of native invertebrates. To this indicative participated a diverse group consisting of parents and children, as well as youth from different ages until adulthood. For the propose of this activity we create a cartoon character of a native cockroach

to generate empathy for cockroaches, it corresponds to a *Moluchia* species that inhabits the Ravine *Moluchia strigata* (Figure 10)

Figure 10: Educational walk in Cordova's Ravine

v) **Día de la Fauna Chilena (Metropolitan Region, Santiago. November, 2015):** We participated in a fair in the front of the Museum of Natural History in Santiago in the context of "The Day of Chilean Fauna" a commemoration which aims to the recognition of national native animal's patrimony, organised by Roots and Shoots program's Jane Goodall Institute. We set up a stand where people were able to obtain information about native cockroaches. This was a very good experience because we were able to interact with diverse people and even we had the opportunity to speak with authorities such as the Minister of the Environment. For this occasion we generate outreach material such as flyers and stickers (Figure 11)

Figure 11: Day of Chilean Fauna

d) Video:

Based on our field experiences, we made two short documentaries (5 minutes each) where we show our field work first and the second the work we do in the laboratory. Both are available on our video channel, with English subtitles (https://www.youtube.com/channel/UCn8nAHOaZLQeBCTGZNlxH-w).

e) Symposium of Insect Conservation in Chile

We organizsd a symposium called "First Meeting of Insect Conservation Initiatives of Chile" (Figure 12 and 13) where we invited all active groups who are currently working in the field of insect's conservation in our country. This event took place at Metropolitan University of Educational Sciences in Santiago. It was open to all kinds of public, and reached a big audience though social networks and flyers, to this event we counted 130 persons.

http://www.umce.cl/index.php/fac-ciencias/inst-entomologia/item/1408-exitoso-primer-encuentro-de-iniciativas-de-conservacion-en-insectos-de-chile-en-la-umce

Figure 12: Meeting poster

Figure 13: Meeting program

f) Press appearances

Our project has also appeared in print, in the newspaper La Hora (see attached pdf).