

## **Project Update: August 2023**

### **Executive Summary of the Project**

Deforestation and forest degradation have serious effects on tropical herpetofauna. In this context, the conservation of reptiles and amphibians depends on remaining forest fragments and ecologically appropriate matrices for species maintenance, such as agroforests. However, factors acting at the local and landscape scale may influence the capacity of these systems to maintain species diversity. The main objective of this project is to determine the importance of cocoa agroforestry systems for the maintenance of reptile and amphibian communities in anthropogenic landscapes of southern Bahia. In particular, we intend to assess the effects that local and landscape environmental factors may exert on alpha and beta diversity, as well as the effect of these factors on the functional and phylogenetic diversity of reptile and amphibian communities. Finally, the project aims to assess whether taxonomic diversity can be a good indicator of functional and phylogenetic diversity, as well as to understand whether regional context can interfere with the relationship between these dimensions of diversity. The results of this research will allow us to understand how landscape structure and local vegetation complexity influence the ability of cocoa agroforests to mitigate the negative effects that land use change and forest degradation generate on reptile and amphibian communities in anthropogenic landscapes.

### **Activities**

**January – April 2023:** From January to April 2023, we conducted sampling of amphibian and reptile communities in 30 cacao agroforestry systems distributed in anthropogenic landscapes in southern Bahia. At each of the sites, two people actively searched for amphibians and reptiles during two time periods: daytime (10 am-1 pm) and nighttime (6 pm-9 pm). Species were searched in a variety of locations including rocks, fallen logs, water bodies, leaf litter, and cocoa and non-cocoa trees. Sampling of herpetofauna ranged from a maximum height of 2 m to the to the understory floor. Herpetofauna were sampled on 2 days in each of the 30 cacao agroforestry systems. Thus, the total sampling effort for this first sampling campaign was 60 days.

In addition, at each site we measured several local environmental variables. These variables were: the depth of leaf litter on the ground, the density of shrub and herbaceous plants, the density of cocoa and non-cocoa trees, the density of fallen trunks and branches on the ground, the canopy cover (measured above the canopy of cocoa trees), the air temperature and the relative air humidity.

**April – July 2023:** During these months, we performed data entry into Excel (data on individuals, species recorded, and environmental variables measured) and identification of many amphibian and reptile species whose identities were unknown to us. The identification was done by herpetologists from our university. As preliminary results of this first sampling, we obtained a total of 3349 amphibians from 66 species and 385 reptiles from 30 species.

**Works to be done in 2023 August to December 2023:**

The next steps we will take in the remaining months of the year will be:

- 1) Analyse the first preliminary data.
- 2) Carry out the second season of amphibian and reptile sampling in the same cocoa agroforestry systems (60 days of sampling).
- 3) Present preliminary results to cocoa farmers and photos of the organisms recorded in their agroforests.