

## **Project Update: May 2019**

Achievements so far:

- Inventory of plants in isolated trees, open pasture and pasture-forest edge areas – Partially achieved

As the inventory of this areas is very laborious it was not possible to complete it in a single fieldwork trip as initially planned. It is in progress and it will be completed by the end of the project.

- Identification of species of collected plants – Partially achieved

As the project is in progress, it will be completed by the end of the project. Some species were already identified.

- Soil Seed bank evaluation - Partially achieved

As the project is in progress, it will be completed by the end of the project. Some species of soil seed bank were already identified and quantified.

- Structural measurements of isolated trees - Partially achieved

The inventoried trees have already their structural features measured.

- Microclimate measurements - Partially achieved

As the project is in progress, it will be completed by the end of the project. The microclimate of February 2019, March 2019 and April 2019 were already measured.

- Landscape metrics - Partially achieved

The inventoried plots have their landscape metrics already measured.

- Soil Properties - Partially achieved

As the project is in progress, it will be completed by the end of the project. The soil water content of February 2019, March 2019 and April 2019 were already measured.

- Seed rain evaluation - Partially achieved

As the project is in progress, it will be completed by the end of the project. The seed rain of February 2019, March 2019 and April 2019 were already collected.

- Seedling dynamics evaluation - Partially achieved

As the project is in progress, it will be completed by the end of the project.

- Importance of Isolated trees in Natural regeneration - Partially achieved

Through preliminary results, it is possible to observe that the isolated trees play a fundamental role in natural regeneration. But it is not possible to evaluate yet, which factor measured is more determinant for natural regeneration, because the data are still being achieved.

## **Difficulties so far:**

An unexpected difficulty was the time required to inventory each plot. I thought it was possible to inventory all the plots in a single fieldwork, but the inventory is very laborious and time-consuming, so it will have to be done by the end of the project (March 2020).

Another difficulty was the change of the matrix in pasture areas for manioc plantations. This change reduced the number of sample areas and other areas that would be used initially, but were discarded due to the change in pasture type, had to be considered to keep the sample size. A portion of open pasture that had already been fenced had to be excluded because after heavy rains it became a permanent flood. Therefore, the total number of points (10 x 10 m plots) for the natural regeneration experiment will have to be 19 10 x 10 m plots and not more 20.

### **Outcomes so far:**

As the length of the project is 2 years, the most relevant results will appear at the end of the project. But what we can observe so far is that isolated trees play a very important role in the natural regeneration and maintenance of plant biodiversity, since more species are found in these sites than in open pasture areas and even in the pasture-forest edge areas. In addition, arboreal seedlings were found in greater numbers and diversity in the isolated trees than in pasture, where no tree seedlings were found and even on the pasture-forest edge areas. Therefore, the isolated trees function as nuclei of natural regeneration and may be fundamental for the large-scale restoration of the Atlantic Forest.

### **Involving and sharing:**

Local people were directly benefited in financial terms, since they were hired temporarily to perform the service of enclosure of the areas and the removal of vegetation. During this stage, the importance of isolated trees was exposed in informal conversations. At the end of the project, with the most robust results, it will be possible to divulge to the local community the importance of isolated trees in the restoration of the Atlantic Forest and the benefits of the restoration itself, such as compliance with environmental legislation and provision of services ecosystems.

I intend to share the results in scientific journals and in folders for small farmers, and local schools. The REGUA has environmental education projects with students from local schools, where the importance of conservation of isolated trees in pastures could also be divulged to children. In addition, REGUA has forest restoration projects (active restoration) and project results could be useful for less costly forms of forest restoration.

### **Continuation, steps and timescale:**

Yes, according to the submitted proposal, the project will end in March 2020. However, the project may have continuity and long-term aspects in the natural regeneration can be evaluated, since the enclosures will be permanent.

The Rufford grant began to be used as soon as it became available (March 2019). The grant was used to purchase project materials, field trips and payment of labour to carry out the enclosure service and removal of vegetation. As the project is in progress, the grant has been used to fund materials and field trips, and will be used for the purposes of the project until the end of the project (March 2020).

To continue the project until its completion, share the results not only to the scientific community and the local community, but also to other regions where there is a need for restoration and few resources for this action.

### **Team:**

**Prof. Jayme A. Prevedello** from Rio de Janeiro State University: he has large experience in research in landscape ecology and conservation biology. He provided support in study design and will support in data analysis and writing of reports and manuscripts.

**Prof. Mauricio Almeida Gomes** from Federal University of Mato Grosso do Sul: he also has large experience in research in landscape ecology and conservation biology. He provided support in study design and will support in data analysis and writing of reports and manuscripts.

**Prof. Jerônimo B.B. Sansevero** from Federal Rural University of Rio de Janeiro: he is contributing in aspects related to ecological restoration and plant ecology, specially in seed rain study, seedling dynamics and plant identification. He will also support in data analysis and writing of reports and manuscripts.

**Prof. Rui Cerqueira Silva** from Federal University of Rio de Janeiro: he is supervising this project and will support in data analysis and writing of reports and manuscripts.

**Mateus Gonçalves:** he is an undergraduate student who helps in fieldwork and in the laboratory, separating seeds of seed rain and plants to species identification.

**Celso Cadena:** he lives in the municipality of Cachoeiras de Macacu, where the REGUA is placed. He was hired to install the fences and to removal the vegetation of the study sites. He had help of other two local people, that he hired himself.