
Upscaling and enhancing
biological corridors
for the conservation
of *Abronia campbelli*,
through research
and capacity building

Progress Report for
The Rufford
Foundation



For the conservation of *Abronia campbelli* we have focused on **reconciliation** of agricultural production activities with forest protection, creation, and connectivity by establishing biological corridors. This strategy serves to counteract and compensate for habitat loss caused by unsustainable agricultural practices, which are the main threat to the species. Take a look at how we are making this happen through **habitat restoration generated, guided, and sustained by farms.**

Given the critical conservation status of Campbell's Alligator Lizard, the discovery of the new distribution zones, and the steady increase in involvement by locals for its conservation there is a pressing requirement and unique opportunity for a research-based enhancement and expansion of our habitat restoration efforts.

This project will fill this urgent conservation need through a science-based approach to increase current habitat restoration capacity and quality through a network of trained conservation-committed farms

This project marks another milestone in our conservation plan for *A. campbelli* as we further consolidate our coalition with five local farms who through this project are increasing their accountability for the natural resources, species and future human generations with which they share the land. Empowering local actors into taking responsibility and control over conservation actions in their land.

These farms were selected by taking into account each landowner's level of commitment, location of the farm, and their past performance in habitat restoration efforts in the region. The farms have already been mapped and the habitat restoration plan for each one is currently being developed, with

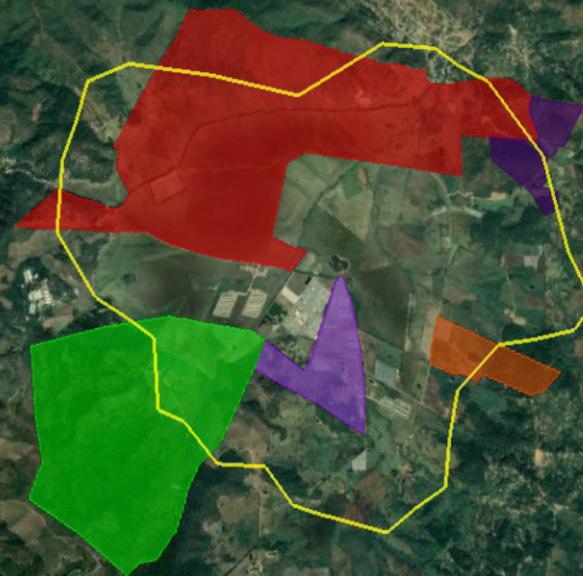
the support of the owners and/or administrators of the farms. Adding the total area of the five farms, this planning will be responsible for implementing conservation strategies that will impact the management of more than 1,000 ha for the next three years.

We have begun planning the creation of biological corridors according to production activities, location of water sources, presence of natural forest, natural regeneration zones, and location with respect to past and future habitat restorations carried out in the area.

Activity/ Farm	Forestry	Agriculture	Cattle	Tourism
1	★	★	★	★
2		★		
3	★	★		
4	★	★	★	
5		★	★	

This plan will result in the creation of a habitat restoration map that will guide the reforestation with the trees that will be generated by their own "satellite" nurseries established with our support, essentially creating tailor-made mini-conservation plans for each farm. This will maximize the farms conservation relevance.

Satellite nursery farms



We have successfully collected the number of seeds needed for the nursery. Seed collection has turned out to be one of the biggest challenges of the project. 2022 has been characterized by increased and sustained rainfall throughout the entire year, which impacted seed collection times and the number of seeds produced by different native forest species.

This resulted in a delay of almost two months for the collection of oak seeds.

This situation, which initially generated great uncertainty, ended up being of great benefit to the project. This climatic anomaly resulted in unusually high seed production of the oak species *Quercus tristis*, a species that generally produces limited seeds.

This tree species is the most important for *A. campbelli* conservation; previous research revealed that 57% of individuals found during *A. campbelli* surveys occupied this tree species.

However, the increase in rainfall resulted in the diminished production of seeds by the species *Quercus peduncularis*, which is generally the species that annually produces more abundant seeds. Therefore, habitat restoration with this species and its research will be delayed until the next production cycle of the nurseries.

The other species that harbors *A. campbelli*, with which we will work is *Liquidambar styraciflua*. This is a very important species since unlike the local oak species that have a slow growth rate, this species is characterized by rapid growth.

Liquidambar styraciflua exhibits a greater capacity for withstanding and surviving moderate drought and floods, making it a highly resistant species necessary for restoration of this extremely degraded habitat.

The seed collection for both species includes the largest number of parent trees possible to maximize the genetic variability of local forest species, reinforcing the resilience of our habitat restoration.

The design of the nurseries is also being refined taking into account the construction site, construction materials, irrigation system and containers. This planning will make

possible the start of the construction of “satellite” nursery farms, that are key for the objectives of this project.

The design of the nurseries has as its main feature an irrigation system that, depending on the accessibility to electricity, is automatic or semi-automatic. Standardizing and alleviating the need for manual irrigation, which is the most time-consuming part of nursery care, turning tree production on farms into a task that can be accomplished and sustained by farm staff.

Part of the preparation of the nurseries includes the generation of bags with suitable soil, so we have prepared 15,000 bags for the satellite nurseries in addition to the ones we prepare for our main nursery.

In this way we will be able to transfer the production of seedlings to the farms during 2023 under our close and constant oversight. The construction and implementation of these satellite nurseries will culminate in the transfer of our knowledge and skills to multiply the number of trees we produce each year.

WHAT IS NEXT?

Build the farm tree nurseries based on the nursery design carried out during the first months.

Once the nurseries are established, we will start the research component designed to develop techniques that maximize the survival success and growth rate of the trees. This is of vital importance since the faster the trees develop, the faster we will have new and more connected habitat for *A. campbelli*.

To evaluate the effect of different treatments we will record presence of pests, height, and survival rate for the seedlings. This data will be analyzed through Analysis of variance (ANOVA) and Chi square test in the statistical software R. Seedling evaluation will transcend the nursery, as planted trees will be continued to be monitored for 10 years. However, the preliminary data obtained during the first year of evaluation will provide key information to improve techniques in the nursery.

In the next two months, the conservation plans for each farm will be finished. Once the habitat restoration plans have been defined, workshops will be held on each of the farms to teach farm owners and staff about the conservation status of *A. campbelli*, forest importance, biodiversity friendly production practices, nursery care

and the habitat restoration plan for each farm will be implemented. These workshops will include live animals and hands on experience for farm owners, managers, and employees.

Once the conservation plans for each farm have been discussed and finalized, they will consequently be put into practice by the farms during the tree planting season that begins with the rainy season. Once the trees are planted, we will continue with the data collection necessary for our investigation.

