

Projecto LIFE Biodiscoveries

A. Framework:

Beginning on July 1st of 2014, Project Life Biodiscoveries is financed by the Community Program LIFE+, and has as an objective to promote the public participation as a mean to control and remove invasive species in the Local Natural Reserve (RNL) of Mata da Machada e Sapal do Rio Coina, located at Barreiro Municipality. The target species are acacias (6 species present) and ice plant, which initially occupy respectively 44 and 26 hectares, in a total area of 380 hectares of the RNL. The population target includes individuals – alone or integrated in formal groups -, families, retired citizens groups, companies, school community and associations, which take part in the Project, either in regular or sporadic activities, by adopting work plots.

B. Work results and evolution:

On the field, work is divided by plots, which means, areas of terrain with confirmed identification and presence of invasive species. These plots vary in size, characteristics and are delimited by the project's core team.

As such, there are plots that are the responsibility of the field work team and other are assigned to volunteers, individually or in groups.

The field work team comprises of inmates from the Estabelecimento Prisional of Montijo, as a result of a signed protocol between this prison establishment and Barreiro's City Hall, and it is responsible for the initial field work regarding removing the invasive species, including cleaning and arranging the plots, facilitating the next volunteer work.

They also step in by ring-barking acacias, with a continuous and daily work effort, in comparison to the volunteer work that is periodic. It is important to point out that the technical support team's work area is quite larger, including 30 plots with a total area of 113,01 hectares.

They intervene directly on the smaller concentrations of acacia and isolated trees, thus avoiding further dispersal and allowing the future work to focus on the areas more densely invaded. Their main task is to prepare and clean the areas prior to the volunteer intervention. As such, they use hacksaws to cut the dense branches that may difficult the access to the trees, scrapers to remove the bark and smaller tools to clean brambles and twigs from the invaded areas.

Regarding the management of invasive plants using volunteer work, it is important to state that this is the project's main pillar and predicts the plot adoptions by several schools, associations, NGO's, scouts, families, companies and retired citizens. From them it is expected that they work at least twice per year on their plots.

When assigning plots, which is done by the project's staff, it is done considering the group size, preference of target species, area and location. It is verified that the more active groups are informal ones, integrated by families and friends who can better organize themselves and travel easily to Mata da Machada.

There are examples of groups with a more regular dynamic, that help each other and share their experiences and gathered information. The organizations with a higher number of people end up doing 1 to 3 activities per year in their plots although with bigger groups. On the field, the majority of schools intervened in removing ice plant due to its ease during most of the year.

The lighter intervention methods applied here allow the volunteers an easier integration, by using only gloves and pocket knives as their work required tools. There were assigned 67 plots to volunteers with a total area of 51,48 hectares. In spite of the plot adoption support, 4 of them were abandoned and await re-adoption. As a final number, so far there have been 1714 volunteers.

In regard to the field results, corresponding to the invaded areas within the RNL, we have registered an increase of invasion since the beginning of the Project, mostly due to the detection of new invasion focus. However that does not translate into an increase in the number of invaded areas, because this specific survey will only be done in the next global survey during Autumn

It is possible to observe the disappearance of several patches of ice plant, still existing small mounts of dried ice plant in intervened areas. In the case of acacias, this observation is more difficult, because even with a high quantity of dead and ring-barked acacias, many are drying up and many small others are sprouting from seed banks. These smaller ones will be worked on from now on, in the form of manual removal. There are also evidences that in some broken and incorrectly peeled acacias there is regeneration and the growing of new branches and leaves.

C. Monitoring the project's results

The Project foresees the making of an **invasive species removal result monitoring** and a **habitat recovery of the intervened areas monitoring**. Regarding the first one, there have been evaluated 82 plots of a total of 92, these having been assigned until April of 2016. Two parameters have been evaluated: 1) amount of work done; 2) visible effect in acacias (see, in ANNEX, the detailed maps of this evaluation). In 41 of the plots, 2 evaluations were done, the first between February and May, and the second between July and August. In 14 plots there is an increase in the amount of work done, revealing the effort of the good work. In 13 other plots, the regeneration of acacias and ice plant in previously intervened areas accounted for a negative evaluation. The remaining plots were evaluated only once and they will be re-evaluated in the next Autumn. In 34 plots, both acacias and ice plant were present, in 30 only acacias and in 18 plots there was only ice plant. Of the 82 analyzed plots, 51 show a big work evolution, and in 29 of them this has translated into a strong impact in the reduction of invasive species presence.

Regarding the **habitat recovery of the intervened areas**, the monitoring effort has been higher in wetland habitats, which are denser in the southeastern region of Mata da Machada. It has been verified that in 80% of the transects done, *Acacia longifolia* and *Acacia melanoxylon* were present. The ice plant (*Carpobrotus edulis*) was found in low amounts, while *Acacia melanoxylon* is the most abundant species.

The concrete results for biodiversity are not yet visible, and due to the used model in the chosen intervention of the Project, that was to be expected. It requires time for the conditions of the environment can change, first with the death of the invasive trees and then due to the progressive regeneration of the natural systems.

Finally the project's monitoring of the social-economic impact will be promoted, within its contribution of the repositioning of the Barreiro Municipality and its public image, in the defense of the natural patrimony of the County by measuring the effects of the society's mobilization towards this goal.

This evaluation will be made through surveys to the population, in three distinct phases: in the project's beginning, in order to have a situational reference; as a mean to detect eventual deviations in the project's goals and normal development; and at the end of the Project.

The initial stage of surveys (386 samples) was made during July of 2015, showing positive results, regarding the knowledge of the RNL and of Project Biodiscoveries, in spite of the existence of some aspects needing improvement.

First of all, it is possible to certify the populations knowledge over the study area (Mata da Machada e Sapal do Rio Coina), concluding that 98% of the inquired people knows Mata da Machada and 82% know Sapal do Rio Coina. The classification of protected area happened in 2012, and we were able to verify that 75% of the population is aware of this classification.

Regarding the subject of invasive species, 25% know what they are and 19% is aware of their impact on the environment. Only 6% know some of the species present at the RNL. About Project Biodiscoveries, 19% know the Project, having obtained the information through the internet and social networks (35%), family and friends (25%), and the municipality (24%). The expectations more associated with the project are nature conservation (41%) and the improvement of quality of life (26%) and the main benefits to the RNL are forest fire prevention (59%), and preservation of native species (31%). Generally, 88% considers that the Project will consolidate the County's positive image, based on a high quality environment.

Also, it was possible to show, that a significative portion of the population (19%) is willing to be a volunteer in the Project and with (62%) that integrate organisations, would like to adopt a plot for the Project.

D. environmental awareness and result propagation

Environmental awareness is secured by the project's and Center of Environmental Education (CEA) workers, during regular and/or sporadic activities (for exemple, school visits and summer camps), by including explanations at the field, in order to alert about the problematic of invasive species. It is noteworthy saying that during the last summer camps, as a way to evaluate the effectiveness of the transmitted information, small surveys were made, both at the beginning and end of the two weeks of summer camp lenght. In 2015, overall 150 children (between the ages of 6 and 12) participated, and the same number is predicted for 2016.

During these two years of Project, overall, 17 environmental awareness initiatives were made, about different themes, all inserted in the project's promotion, with a total of 466 participants.

Regarding the project's promotion, the CEA contact list includes about 1440 emails, which receive Biodiscoveries information regularly, including newsletters.

With the same goal, press releases are issued towards the media, and promotion material is created, such as pamphlets, flyers, posters, with printed and digital editions. The City Hall publishes a bulletin named "Folha Viva", that includes regular information about activities made by the CEA and Project Biodiscoveries.

As for media, it is important to recognize the integration of inmates in the Project, which lead to a televised report in Jornal da Noite (SIC), and the Project was awarded with a environmental distinction named "Rostos do Ano", given by the Regional Newspaper Rostos.

In January of 2015, the first Technical Seminar of LIFE Biodiscoveries was made, where several experts shared experiences and information about invasive species, followed by a field trip to know closer the intervention área.

In April of 2016, a Conference on the Project and its work progression concerning the removal of invasive species was made.

The "Subida do Rio Coina" happens once per year, and it is a more informal way of reaching the general public and share the role that everyone can have in the project's development.

Additionally, further contacts with several companies were done as a way to present the Project, and as a way they can participate in its initiatives, such as teambuilding and removal of invasive species.

Finally, sharing the experiences and results (networking), beyond the seminar previously mentioned, were promoted at national projects: BRIGHT (LIFE10 NAT/PT/075), BIO+ Sintra (LIFE09 INF/PT/000048) and Project Invasoras, in this case, two different occasions.

In May of 2015, there was a visit from the Polish Project "Endangered species and habitats protection of the Natura 2000 "Ostoja Wigierska" (LIFE11 NAT/PL/000431), and there was the opportunity to meet the strategy set by Biodiscoveries on facing invasive species. Also there was a very productive sharing of ideas, even though coming from two very distinct realities. Furthermore, on the 7th of June of 2016, a group of teachers (from Portugal, Spain, Greece, Turkey and Lithuania) of the Project "Erasmus+ - Implementation of Agenda XXI", visited Biodiscoveries.

E. Conclusions:

In short, it is still necessary the future intervention and collaboration of volunteers, as a way to fortify the project's results. There were initial delays, due to climatic conditions and temporary absence of the project's staff members in order to begin the field work, although the volunteer work started sooner than expected.

Assessing the current status, the results of Biodiscoveries are positive, and we are aware that the next months will be crucial to gather more results and evaluate its effects.