

Third Year Result Summary

Project 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 Coima, located at Barreiro Municipality. The target species are acacias (7 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.

The development of the work made it possible to verify that the volunteer management strategy and, consequently, of communication, implies adjustments in response to the initial predictions. The project should be more open to informal publics, families and individuals. On the other hand, greater efforts are being made to maintain the interest of volunteers rather than investing in attracting them.

The motivation of volunteers may include reinforcing the communication of initiatives to recover natural systems, understood by them as positive, to the detriment of negative actions such as "killing" trees.

For this reason, there has been a progressive increase in the importance of the recovery of the Zebro stream within the project, as a condition of community motivation regarding forest management and the need for invasive species control.

B. Work results and evolution:

As mentioned in the previous report, the plots may have different dimensions and characteristics, but are where the presence of the target invasive species has been identified. It should be noted that there are plots assigned to volunteers and others that are the responsibility of the technical team of the project. This team continues to be made up of prisoners from the Montijo Prison, a result of a protocol between this entity and Barreiro City Hall.

The **technical team** performs a fundamental work during the initial cleaning of the plots, so that the volunteers can easily access the acacias and the ice plant. This team also performs acacia ring-barking, but in large individuals, where other material is needed and also in plots that present isolated trees, which is a fundamental procedure to contain the invasion.

With regard to the **management of invasive species using volunteer work**, it is important to note that this is the central pillar of the project. The assignment of the plot is made taking into account the number of

elements of the group, the preference of species, area and location. The project's team takes special note of the characteristics of each group, as follows:

- Seniors – Removing the ice plant and / or acacias shoots requires that the posture necessary to take is not the most appropriate, which causes unnecessary effort and discomfort.
- Children up to the 6th grade – To make the ring-barkig, the use of knives is required, which is not advisable for these children. Thus, their work is transferred to the removal of ice plant and acacia shoots

So far, it has been possible to involve 4669 volunteers, in which:

Regarding the results on the field, after a gradual decrease in the invasion of the RNL in the previous years, more expressive in the case of the ice plant than in the acacia trees, there is a stabilization of the acacia area due to the difficulties of ring-barking and a new expansion area. This stabilization does not mean a reduction in the invasion area, since the areas where there has been a decrease in acacia are also the areas with the highest density and the most difficult to work. The areas of invasion expansion. The data will be presented in the following point (C).

C. Monitoring Project Results

MONITORING THE RESULTS OF REMOVAL OF INVASIVE SPECIES

The aspects covered in this monitoring are:

- **Evolution of the invasion:** This monitoring refers to the global assessment of the invasion, ie, the area of invasion, distinguishing acacias and ice plant
- **Work intensity:** it is intended to evaluate the intervention made in each plot, that is, the evolution of the work done.
- **Work outcome:** we intend to evaluate the results of the interventions, whether the work is producing the expected effects or not, in each plot.

Regarding the **evolution of the invasion**, the annual results of the invasion are shown in the table below, which reflects the area of annual invasion by species (in hectares):

	2012	Δha	Sept 2014	Δha	Sept 2015	Δha	Sept 2016	Δha	Sept 2017	Δha	Sept 2018
<i>Acacia sp.</i>	30.5 ha	+13.6	44.1 ha	+1.44	45.54 ha	-16.12	29.42 ha	-3.92	25,49 ha	+0.02	25,51 ha
<i>Carpobrotus edulis</i>	19.7 ha	+5.9	25.62 ha	+2.4	28.02 ha	-24.17	3.85 ha	-3,22	0,63	-0,45	0,27

The "**Intensity of work**" refers to the amount of work performed in the plot, that is, by observing it, an assessment is made of the intensity of work that has been expended by the volunteers or the technical team on the field.

It was observed that 99 of the 132 plots had a high work intensity (75% corresponding to 43.825ha), 10 plots had an average intensity (7,58% corresponding to 3,365ha), 11 had low intensity (8.33% with 3,545ha), and 5

are still without intervention (3.79% corresponding to 1.578ha), but with the work plots already prepared and cleaned for the intervention of volunteers.

The "**Work result**" refers to the effects that the work has had on the acacias and on the ice plant.

It was verified that in the total of 132 plots, 107 showed high results (81.06% corresponding to 48.557ha), 9 plots showed average results (6.82% corresponding to 1.827ha), 4 showed few results (3.03% corresponding to 0.683ha), and the remaining 5 still did not show results (3.79% with 1.246ha), mostly due to the recent interventions.

MONITORING THE RECOVERY OF HABITATS FROM INTERVENED AREAS

Concerning the recovery of the habitats of the intervened areas, the monitoring work reveals that there were small non-significant changes. Even at the level of specific richness, where there were significant changes (a large rise followed by a somewhat less marked decrease), it is thought that the cause will be related to the differences in precipitation between spring and not with the project. This means that the elimination of acacia and ice plant has still had little impact on habitat conservation, either in a positive or negative way.

It should be noted, however, that the plots in which these habitats exist have almost had no intervention because the two scientific organizations which have undertaken to do so, have not fulfilled those commitments. It has been decided to reassign the plots with the most relevant values to an NGO with proven work, and since then there has been more effort in removing acacias, but still without relevant changes in altering the floral landscape.

It should also be noted that the recovery actions of the Zebro stream have been reinforced, which may eventually translate into new areas with hygrophilous habitats, but this will certainly not be subject to evaluation on the project's horizon. From these actions, it is expected a progressive renaturalization of the stream, with replacement of the marginal acacia by willow, and change of the profile of the forest drainage ditch to a more naturalized profile.

A second nucleus of *Euphorbia uliginosa* was detected and five new native species *Centaurea melitensis* L., *Danthonia decumbens* (L.) DC., *Deschampsia stricta* Hack, *Euphorbia terracina* L. and *Hypericum elodes* L. were found. *D. stricta* should be noted for being a Lusitanian endemism.

With regard to the coverage of exotic species, there has been a generalized decrease considered significant. This was due to the continuation of eradication actions.

MONITORING THE SOCIO-ECONOMIC IMPACT OF THE PROJECT

The **monitoring of the socio-economic impact of the project** is carried out through population surveys, in 3 distinct phases: at the beginning of the project, in order to have a reference situation; mid-project to detect possible deviations from the normal development of the project and its objectives; and at the end of the project.

The third survey will only be done closer to the end of the project, so there are no changes from the previous report.

D. Environmental awareness and dissemination of results

With regard to awareness raising, the **Invasion On Sunday** initiative was created, with a fixed schedule on the third Sunday of each month, in order to support all those who intend to contribute to the control of invasive species and create an incentive to participate. Thus, in the period between 9.30 and 11.30 a project technician is on hand to receive and follow up volunteers who have already adopted plots and who feel the need for some support or other participants who want to try the ring-barking technique. This action began in July 2017.

In order to get more volunteers, particularly from outside the municipality, to whom it is more difficult to get information, a strategy has been chosen to join efforts with associations that are seeking different places for their actions. Thus, several joint initiatives have already been carried out with **Plantar1árvore** and with **ASPEA**, options that have been recently consolidating.

In addition, contacts have been made with **companies** so that they can integrate the actions of the project. This funding effort resulted in the participation of some companies in different initiatives.

The **Subida do Rio Coina** is another initiative that is already part of the annual program, which takes place once a year and is a more informal way of reaching the general public and communicating the role they can play in the development of the project LIFE Biodiscoveries.

Throughout the project, a number of public awareness initiatives were promoted on various topics such as seed sowing, walking, natural engineering and identification of the flora and fauna of the RNL.

Regarding the dissemination of the project and its initiatives, the contact database of the Mata da Machada and Sapal do Rio Coina Environmental Education Center (CEA) is used and other project-specific bases were created, which include:

- Volunteers
- Individuals who have already been involved with the Project but do not have a NGO
- ONG's
- Universities
- Companies
- Municipalities
- Media

The bimonthly project's newsletter is sent to every contact. Media are also sent press releases. Since the beginning of the project has been produced various promotional material, such as posters, flyers and leaflets, in digital and print editions. The Barreiro City Council publishes the "Folha Viva" Bulletin, with information on the activities of the Environmental Education Center, which always includes information on the actions of the Biodiscoveries Project. CEA Facebook is also a platform that is often used to publicize Biodiscoveries initiatives.

The project initiatives are also published on the website and in the newsletters of this municipality.

Technical Seminars:

An effort was made to organize seminars covering diverse topics and different target audiences, while serving as a strategic change in communication and recruitment of volunteers.

For this reason, a seminar was held to train volunteers for more comprehensive management of their plots, following what had already been done in relation to natural engineering.

- **Seminar “Seeds and Sowing”**

It took place on June 7 and it was attended by 28 participants. This seminar discussed topics such as nursery certification and the experience of each guest in managing these spaces.

The other two seminars were aimed at more institutional audiences, the first aiming to broaden the project's knowledge among companies with greater presence in social responsibility actions, and the second much more oriented towards the dissemination of results and the exchange of experiences, seeking to motivate other municipalities for the development of concrete invasive control actions.

- **Seminar "Social Responsibility and Business Volunteering"**

Considering the number of companies that have already participated in Biodiscoveries and their increasing participation in national volunteering activities, the technical team invited GRACE, Associação Mutualista Montepio, Sair da Casca and DHL to present their experience in social responsibility. and their participation as volunteers in Biodiscoveries. *

This seminar was attended by 34 people and took place on February 7, 2018.

- **Seminar "Municipalities and Invasive Species Management"**

On May 10, 2018, a seminar was held dedicated to the exchange of experience between municipalities that develop work (or intend to develop) in the control of invasive species. Thus, it was possible to rely on the experience of the municipalities of Vouzela, Sesimbra, Torres Vedras, Figueiró-dos-Vinhos and Montemor-o-Novo.

This seminar was exclusively attended by technicians from other municipalities.

NETWORKING:

Biodiscoveries was present in different initiatives, which allowed the dissemination of results, but also the exchange of experiences and networking with other projects and realities. The following stand out:

- **International Conference EMAPI14 (Ecology and Management of Alien Plant Invasions)**(September of 2017)
 - Biodiscoveries had the opportunity to make a communication on the first day, including a presentation of a scientific poster, promotion of a symposium and to be one of the available field trips for the participants.
- Eugénio de Almeida Foundation (November 7th of 2017)
 - Participation in the Meeting on the **Contribution of Volunteers to the Conservation and Protection of the Natural and Environmental Heritage**, where five environmental volunteer projects were represented to discuss their experience, promoting reflection and voluntary action on environmental volunteering and conservation of natural heritage.
- The seminar “Invasive Municipalities and Management” was also a relevant networking initiative.
- Similarly, participation in the Bright project's final seminar allowed for the exchange of experiences both with Bright himself and with the other participants.
- The participation of technician Mauro Hilário in the LIFE Berlengas project as a volunteer was part of the exchange of experiences between different LIFE projects with relevant invasive control actions.

E. Summer Holiday Camp

For the third consecutive year, questionnaires were given to the children who participated in the five fortnight of Summer Camps in Mata da Machada. The questionnaires were conducted at two different times: on the first and last day of every fortnight.

In 2017, the Mata da Machada Environmental Education Center also promoted a Summer Camp for adolescents, aged between 13 and 15, with activities that fit the objectives of the LIFE Biodiscoveries project. Thus, it was also decided to carry out surveys on this group of adolescents.

Participants answered the following questions:

- Do you know what invasive species are?
- Can you name any invasive species?
- Do you think invasive species are harmful to nature?

It was thus possible to verify that there is a quite significant evolution of children's knowledge after the activities. It was verified that the theme of invasive species is something that marks them and that they do not forget, and it can be concluded that the proposed objective was successfully achieved, and there was a great evolution of knowledge of the child.

F. Conclusions:

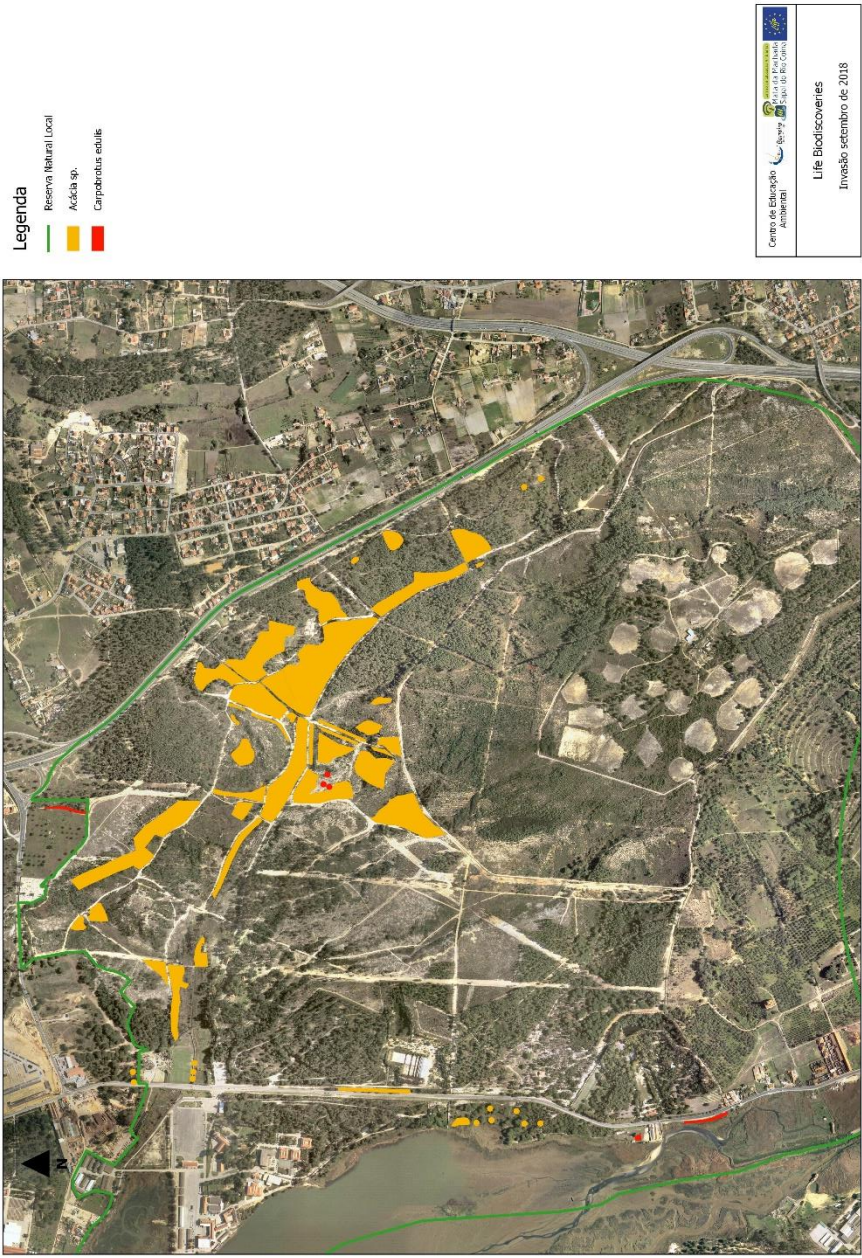
The main result, which is certainly projecting beyond the end of the project, is the way the City Council, as a whole, but more specifically in the departments most directly involved in public space management, integrated the concerns with invasive species management.

The first consequence of this change (the application itself initially had to overcome internal resistance due to lack of awareness of the problem), is the integration of components related to the management of invasive species in the general environmental awareness and management actions of Mata da Machada, aspect that it will easily be maintained in the future.

The implementation of the Biodiscoveries project meant that the technical team had to adapt several times, since the application was made based on assumptions that were not always verified. Even so, it is considered that on the field it is possible to verify the very positive results, such as the small area of existing ice plant and the significant reduction of invasion of acacia.

During this period an effort was made to engage various target audiences through public awareness initiatives and restoration of the intervention areas. The latter were not foreseen, but they have proved to be crucial for attracting new volunteers and maintaining the motivation of older volunteers.

ANNEX:





- Legenda**
- Reserva Natural Local
 - Intensidade do trabalho
 - Não avaliado
 - Sem intervenção
 - Intensidade baixa
 - Intensidade média
 - Intensidade elevada
 - Invasão não trabalhada



- Legenda**
- Reserva Natural Local
 - Intensidade do trabalho
 - Não avaliado
 - Sem efeito
 - Resultado baixo
 - Resultado médio
 - Resultado elevado
 - Invasão não trabalhada