

Second Year Result Summary

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 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 already allows us to verify that we must make some corrections within our adopting strategy, especially when defining target audiences, which should be less segmented and more open to informal audiences, families and individuals. Regarding the maintenance of keeping the interest of the volunteers, to the detriment of the effort in their reception and the need to consider long periods in which the ring-barking is difficult and can be very frustrating for the volunteers. The motivation of the volunteers may run through the reinforcement of the communication of actions to recover natural systems, being understood as positive, to the detriment of the negative actions of "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 way of motivating of the community in towards the management of the forest and the need to control invasive species.

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

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

- Comunidade Educativa – 2159
- Population – 1253
- Senior citizens – 207
- Companies/business – 428
- Scouts – 201
- Associations – 245
- Others - 176

Regarding the field results, there was a gradual decrease of the invasion within the RNL, more significant in the case of the ice plant than in the acacias. These data will be presented in the next point.

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):

	2011/12	Δha	Sept 2014	Δha	Sept 2015	Δha	Sept 2016	Δha	Oct 2017
<i>Acacia sp.</i>	30.5 ha	+13.6	44.1 ha	+1.44	45.54 ha	-16.12	29.42 ha	-5.19	24.23
<i>Carpobrotus edulis</i>	19.7 ha	+5.9	25.62 ha	+2.4	28.02 ha	-24.17	3.85 ha	-3.35	0.5

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 92 of the 126 plots had a high work intensity (74.4% corresponding to 40.271ha), 17 fields had an average intensity (12% corresponding to 6,883ha), 5 had low intensity (4.8% with 2,850ha), and 10 are still without intervention (7.2% corresponding to 2.01ha), 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 126 plots, 105 showed high results (84.4% corresponding to 31.48ha), 7 plots showed average results (5.7% corresponding to 0.985ha), 6 showed few results (4, 8% corresponding to 1,022ha), and the remaining 6 still did not show results (4.8% with 1.69ha), 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. At present it has been decided to reassign the plots with the most relevant values to an NGO with proven work, and it is hoped that there will be a change in the situation. It should also be noted that the stream recovery actions may eventually lead to new areas with hygrophilous habitats, but this will certainly not be measurable within the project horizon.

However, in regarding the cover of exotic species, there has been a general decrease, and in 2 habitats it was considered significant. This was because they continued to carry out eradication actions, and even some that had already occurred before, finally gave result because the summer of 2016, extremely hot and dry, helped to kill some acacias already intervened and debilitated.

A new autochthonous species (*Filago pyramidata* L.) was found in this campaign, which was not mentioned by the Portuguese Botanical Society, in the characterization of the flora and vegetation of the RNL.

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 intermediate monitoring phase (a sample of 419 surveys) took place in April 2017, revealing some interesting aspects, which we highlight below.

The percentage of inquired who stated that they know what invasive species are, has increased compared to 2015 (25.0% in 2015 and 29.8% in 2017). It is also worth noting that those who claimed to know what invasive species are, considered that these species are harmful or very harmful in terms of environmental impact.

It is also a positive fact that the% of inquired people who reported knowing the invasive species in the Local Nature Reserve increased significantly compared to 2015 (24.5% in 2015 and 56.8% in 2017).

Regarding the knowledge that the inquired revealed about the LIFE Biodiscoveries Project, there was a positive evolution in the% of citizens who are aware of the project (19.0% in 2015 and 24.3% in 2017). However, taking into account that of the 102 respondents who stated that they knew about the project, 65 indicated that they became aware of the project through information provided / posted in Mata da Machada, which can be concluded that the project's communication is being effective for visitors of Mata da Machada, but can be improved through other platforms and means.

With regards to the percentage of inquired who consider that the project could contribute to reinforcing the positive image of the county, based on high environmental quality, there was no significant change (88.0% in 2015 and 86.9% in 2017) , so that this result is still considered a positive result.

The% of inquired who showed interest in participating in the project as volunteers decreased compared to the results of the first phase of project evaluation. This may be due to a variation in the "Occupation" of the individuals in the sample, since in 2015 only 44.0% of the individuals were studying or employed, and in 2017 it rose to 62.6%. This is relevant when the main reason the citizens inquired say they do not have an interest in participating in the project as volunteers is the lack of availability (270 out of a total of 354 who have no interest in volunteering).

The percentage of telephonically inquired people in the Metropolitan Area of Lisbon who claimed to have visited the municipality of Barreiro decreased compared to 2015 (77.0% in 2015 and 58.3% in 2017). It also lowered the percentage of inquired who have heard of Mata da Machada and Sapal do Rio Coima (57.0% in 2015 and 40.8% in 2017). However, there is a rise in the percentage of respondents who have visited one of these territories, that is, the ratio between those who know these territories and those who visited them is higher in 2017.

The recommendation still is to bet on a greater dissemination of the RNL in the territory of the Metropolitan Area of Lisbon, in order to attract more visitors to the municipality and, consequently, the Local Nature Reserve. In general, the results of this evaluation report are positive, especially as regards the population's knowledge of the project's target territories and the LIFE Biodiscoveries Project itself, the environmental impact of invasive species and the importance of the project for the image of the municipality.

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**, which is an option that is planned to be followed in the future.

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.

In the course of these 3 years of project, it has been invigorated by numerous public awareness initiatives on different themes such as tree and shrub sowing, walking routes, natural engineering and identification of the flora and fauna of the RNL.

About the dissemination of the project and its initiatives, the CEA's contact database is used and other specific project bases were gathered, including:

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

The project's newsletter is sent monthly to everyone. Press releases are also sent to the media. Since the beginning of the project has been produced diverse material of publicity, like posters, flyers and leaflets, in digital and printed editions. The CMB publishes the Bulletin "Folha Viva", with information about the activities of the Environmental Education Center, which always includes information on actions of the Biodiscoveries Project. CEA Facebook is also a platform that is often used to publicize Biodiscoveries initiatives.

Technical Seminars:

As for the Technical Seminars of the project, during the year 2016 it was organized the **Seminar Biodiversidade Daqui**, on October 15, which was attended by 40 people. Speakers focused on the management of natural spaces as a key tool for local biodiversity. This seminar highlights the presentation of Sílvia Neves (ICNF) who presented the work that has been carried out in the control of acacias in the Serra do Açor. The project team had the opportunity to present the results obtained with the Biodiscoveries during a walk that went through several work plots.

On February 18, 2017, **a Workshop on Natural Engineering** took place. Having as a principle that natural regeneration is powerful enough to recover natural systems, when eliminating the factors that stop its development, and that the project does not contemplate major recovery actions, with this workshop a first step was made for a change with a natural engineering workshop to train volunteers and others, including the technical team, for the recovery of the Zebro stream, through the use of techniques for recovering water lines based on natural elements, including vegetation. This event was attended by 23 participants.

The **Seminar on Sowing and Plant Nurseries** was also organized on June 7, with 30 participants. This was a moment that was based on the training of the volunteers and the technical team. The seminar ended with a journey through Mata da Machada, where the results of the LIFE Biodiscoveries project could be observed.

NETWORKING:

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

- Agência Portuguesa do Ambiente (APA)
 - A communication at one of the **LIFE Regional Projects Dissemination Sessions and Good Practices**, under the LIFE National Capacity Building Project (LIFE14 CAP / PT / 000004). The purpose of this participation was to promote the Biodiscoveries project and to spread the experience and testimony of the use of the LIFE Program to potential promoters and other regional agents.
- Escola Superior Agrária de Coimbra (11 of July of 2017)
 - A presentation at the **Workshop MONTIS-NATIVA** | Espécies invasoras em Portugal: onde estamos e para onde queremos ir? (Invasive species in Portugal: where do we stand and where do we want to go?)
- **Internacional Conference EMAP14 (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, dynamization of a symposium and to be one of the available field trips for the participants.
- Eugénio de Almeida Foundation (7 of November 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 project was also invited to participate in two training actions of other entities. Like this:

- A meeting at the Naval Base of Alfeite with the aim of demonstrating the techniques used in Biodiscoveries.
- An ice plant and acacia control action, under the responsibility of SPEA and Sesimbra City Council.
- A volunteer action at Ponta dos Corvos, for the control of ice plant, organized by ASPEA and Grupo Flamingo.

E. Summer Holiday Camp

For the second year, questionnaires were made to the children who participated in the 5-fortnight of the Summer Holiday Camps in Mata da Machada. The questionnaires were carried out in two different moments: on the first and last day of the fortnight.

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

Participants answered the following questions:

- Do you know what invasive species are?

- Can you name an invasive species?
- Do you think that invasive species are harmful to nature?

Thus, it is possible to verify that there is a significant evolution of the children's knowledge after performing the summer camp activities. It is verified that the theme of invasive species is something that makes an impression on them and that they do not forget, and it can be concluded that the proposed objective was successfully achieved, with a great evolution of the knowledge of the child.

F. Conclusions:

The execution of the Biodiscoveries project meant that the technical team had to adapt several times, since the application was made based on some assumptions that have not always been verified. Nevertheless, it is considered that in the field it is possible to verify the very clear positive results, such as the reduced ice plant area coverage and the significant reduction of the acacia invasion.

During this period, an effort was made to involve several target audiences, through initiatives to raise public awareness and to recover the intervened areas. The latter were not foreseen but have proved to be fundamental for attracting new volunteers and maintaining the motivation of former volunteers.

ANNEX:



Legenda

- Reserva Natural Local
- Acácia sp.
- Carpobrotus edulis



Legenda

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

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