



## **Berlengas archipelago: A living laboratory for environmental education**

*How a scientific paper can improve connection with nature*

### **The conservation project**

The Berlengas are a small archipelago with a biological heritage of high conservation interest due to its protected habitats, diversity of fauna and flora, and the surrounding sea which is one of the richest marine ecosystems of Portuguese waters. It is an important stopover point for migrating seabird's breeding grounds and to feed. These islands faced some conservation threats in the past, namely the introduction of alien species and the pressure of two economic activities: fisheries and tourism. In 2014 a LIFE project was written to promote a sustainable management of the islands, development of these economic activities, and implement conservation actions. The aim of the project is conserving habitats, endemic plants and seabird populations.

### **Aim**

To engage with the school audience and promote the conservation work undertaken, an environmental education (EE) program was developed to raise awareness about the natural heritage and the value of its conservation. We worked with different

school grades along the years. With the 12<sup>th</sup> grade, we challenged them to develop a scientific work aiming to solve some of the problems present on the islands in innovative manners, encouraging to 'think out of the box'.

## Who was involved?

Two technicians from SPEA, members of the Life project partners (Instituto de Conservação da Natureza e Florestas, Faculdade de Ciências Sociais e Humanas da Universidade Nova de Lisboa and Municipality of Peniche), the Secondary School of Peniche, two teachers of the discipline of Biology and an auxiliary teacher.

## What Happened?

In the Life project, the EE programme involved working with classes throughout the academic year, with sessions inside the classroom as well as outdoors. Specifically, with the 12<sup>th</sup> grade we adopted a continuous approach along the year to explore the biodiversity and ecosystem conservation of Berlengas, under the scientific curriculum, with the objective to develop a research work. Teachers were involved in the planning of activities, using part of it to evaluate the students under the Biology discipline.

The objective was for the students to do research work regarding the different problems that exist on the islands, and trying to come up with innovative approaches to solve them. The problems included were seabird bycatch, biosecurity, yellow-legged gull population management, sustainable tourism, and waste and water management. Students worked in groups to develop a scientific paper and an oral presentation, in which they publicised their results as well as the difficulties faced during the research process.

Along the year, we carried out some sessions inside the classroom, at school to present the Life project, and support the groups work. We provided a bibliography, namely some of the reports produced within the scope of conservation actions of the

project; students could reach the technicians via email to clarify any further doubts. One of the sessions was essentially a follow-up, in which students could ask questions about their work and where we engaged them in a trivial quiz game, that helped lighten the mood. This proved to be an optimal approach to close the session and students valued the knowledge already achieved.

Another session consisted of a field trip to Berlenga Island, where students had the opportunity to talk with the technicians, both from SPEA and from other partner's organizations. They also participated in practical works of removal of Hottentog fig (*Carpobrotus edulis*), one of the actions that was included in the project and directed to the conservation of native plant species.

## Outcomes

This programme helped to raise awareness for Berlengas natural values and the importance of its conservation. Most of the students already knew Berlengas, due to its proximity to Peniche – it's fairly common for people to visit the main island in summer – but few recognized the species or the existing threats. Besides raising awareness, we envisaged to promote an attitude change towards the islands, so students can act as their 'protectors' and hence contribute to the sustainable future of Berlengas archipelago.

Different educational resources were produced along the Life project including a leaflet with the abstracts of the papers written by the students. The final presentations included varied and creative formats during an open event at the school. Some did impersonations of the species and showed what meant to be an endemic plant on an island; others adopted the format of an interview where the local authorities were called to have a more active role on tourism management.



Figure 1 – Removal of hottentog fig sheets in Berlenga and one of the student's presentations on native plants.

## Key messages

- It's important to develop a continuous approach instead of one-off actions in order to have stronger impact on school communities.
- Engaging the teachers from the beginning in the programming of the activities proved to be essential for the programme success, and developing more than just oral presentations (like a quiz at the end of a session or giving them voice to talk about their work) proved to be more efficient
- Although we tried to convey the scientific rigour, students still lack the experience on how to write well in 'the scientific language', but this gives an excellent opportunity to practice and perhaps additional information or guidance could be given in this way.
- The sessions and the type of work developed were structured according to the school curriculum of Natural Sciences and Biology subjects, helping to consolidate concepts, encourage critical thinking and promote the research process.
- Promoting an interdisciplinary work helps deliver the message in a more constructive way.

## Reflection

- When talking about conservation work, try contemplating concrete actions in the field so students can experience *in loco* what is being done – a hands-on experience is always a ‘plus one’.
- Engaging with the school community is fundamental in the process of improving the perception about Berlengas Nature Reserve and helping to spread the importance of conserving ecosystems like this.
- Try alluring to the creativity of children/young – you may be surprised to what they come up with – and it may be a way of engaging families as well.

## References and Links

LIFE Berlengas | <http://www.berlengas.eu/>

LIFE Berlengas | Environmental Education materials

<http://www.berlengas.eu/pt/sensibilizacao>