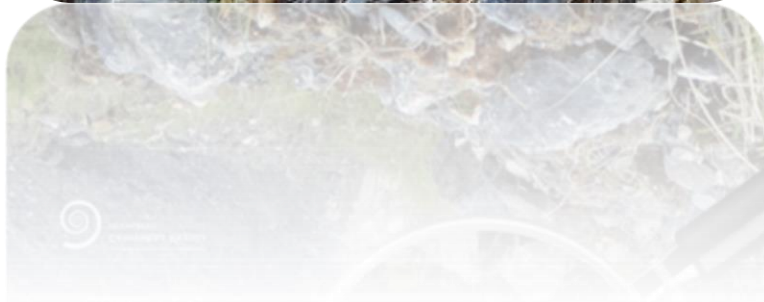


BIODIVERSITY STORIES

Final Project Report

(to be submitted by 15th September 2022)



1. Contestant profile:

▪ Contestant name:	REBECA MARTIN
▪ Contestant occupation:	Environmental technician
▪ University / Organisation	Universidad de Salamanca
▪ Number of people in your team:	3

2. Project overview

Title:	BIODIVERSITY STORIES
Contest: (Research/Community)	ESPAÑA
Quarry name:	CANTERAS DE LA FÁBRICA DE CEMENTOS REZOLA (ARRIGORRIAGA)

Abstract:

Biodiversity stories is presented as a communication and environmental dissemination tool through photography and literature to publicize the biodiversity of the ecosystem where the Arrigorriaga exploitation is framed. The exhibition has been designed through the literary creation of micro-stories that narrate the most significant biological aspects of the most ecologically sensitive faunal species, becoming an innovative technique of environmental education within the educational system. To do this, 10 significant species of Arrigorriaga have been selected, sensitive to the ecosystem they represent, and high-quality graphic material has been collected to establish the material. After the period of artistic creation, the result has been an easy-to-use traveling exhibition, which can be transmitted to the entire teaching community (students, teachers, families, etc.). The material has been translated from Spanish, its first printed version, into Basque, the language of the community where the scene of the exploitation that is the object of the contest is located, and into English, to facilitate its understanding, the latter two being in a digital version.

To complete its transferability and facilitate the work of the teaching community, a specific didactic manual and complementary web support have been designed, with educational activities that will allow the material to be worked on in its entirety. Conclusively, it is a tool that connects art and biodiversity that aims to serve as an innovative experimental methodology in environmental education, in addition to bringing the natural environment of Arrigorriaga closer as a benchmark in the mitigation of nature deficit.

FINAL REPORT:

Introduction:

Biodiversity stories is an enhancement, at a social and educational level, of the biotic resources offered by the ecosystem where the Arrigorriaga exploitation is framed, already reflected by the company within its Biodiversity Plans. To this end, an innovative and creative environmental education tool has been created for the educational community where art and nature have been worked on from literature and biology. Its aim is to achieve a new form of environmental dissemination and communication, where the final result is the public commitment to conserve the biodiversity that the exploitation possesses from an artistic point of view: through literary micro-stories starring 10 faunal species with high ecological sensitivity in the Arrigorriaga ecosystem and under an exhibition and itinerant format, adaptable to numerous educational and interpretive scenarios. In order to be worked on by the teaching community as a whole, not only an interpretation of the canvases is intended, a Didactic Manual dedicated to teachers and non-formal educators has been designed in order to work on the contents from an environmental awareness perspective. All the material is supported by linguistic facilitation, since the work is translated into 3 languages (Spanish, English and Basque) and web support to improve the project, where all the material is available digitally. In this way, it increases its dissemination and dissemination, allowing it to reach a greater number of recipients in any part of the world.

The **objectives** of the project are summarized below:

- Ecological conservation objective:

Recognize and value the ecological role of the most sensitive species within the ecosystem of the Arrigorriaga territory.

- Objective of environmental innovation:

Contribute to new formulas of environmental education that reach a greater number of social and participatory niches, integrating artistic disciplines as media.

- Objective of pedagogical education:

Sensitize the educational community in ecological knowledge and biodiversity conservation through the beauty of literature and photography, mitigating in the participants their nature deficit.

- Objective of artistic creation:

Project and edit new educational and informative materials that function as practical methodologies working on the multi-sensory perception that the arts allow and motivating the educational community through creativity.

- Objective of social commitment:

Increase the company's social commitment to the territory, strengthening the environmental value and citizen participation through the educational community.

Although the initial design proposed working only with the teaching community, starting from the base of carrying out educational actions in the educational centers of the local environment where the operation object of the contest is located, added difficulties and that will be described in this same report, have transformed and open the project to a broader community, where it can be developed in any educational and environmental awareness field, aimed at the school-age population and as a multiplier effect, the rest of society. Therefore, the turnaround has allowed the project's dissemination capacity and its social and environmental awareness objective to be **expanded exponentially**.

In the first line, the material and the educational improvements developed in this project will be and are addressed to the entire local community of Arrigorriaga and municipalities of the territory, increasing the value and social responsibility of the business group. In addition, and within this line, it can be offered to local administrations that develop educational programs, environmental awareness and citizen participation, to make available social and environmental initiatives that the company contemplates in the territory.

However, the material has been developed in **several languages** with its digital version, becoming a material that can be extended to the entire public of the Basque Country that prioritizes its official language, to English-speaking educational communities, both in educational centers whose proposal is a program bilingual within Spain and outside this country. In order to reach this wide range of recipients, a digital version has been adapted, where the contents can be worked on at the same time in several participating points through web, downloadable and printable support.

As an educational improvement to the joint project, the educator who interprets the material in front of the recipients, may rely on a **Didactic Manual** whose fundamental objective is to offer a battery of activities identified with each species related in the artistic material. These activities with a dynamic methodology with the recipients whose objective is environmental awareness through knowledge and active learning to work biological, ecological and artistic content of the selected fauna species.

Actions and activities:

The actions developed throughout the project are established in chronological phases, which will be developed below:

FIRST: Selection of information

During this first phase that has started the work, a preliminary analysis has been carried out from the technical and scientific point of view, in the field and office, to create an inventory of the faunal and ecological resources of the Arrigorriaga environment. Of the inventoried species, those that are supposed to be the most ecologically sensitive indicators in the territory or whose biology highlight certain points of interest to be interpreted, such as their reproduction, search for food, migration and refuge, and ethology, have been selected. Under this selection criterion, different faunal species were chosen, covering several taxonomic groups such as amphibians, reptiles, birds, mammals or insects.

This is the final selection:

- Bullfinch (*Phyrrula phyrrula*)
- Peregrine falcon (*Falco peregrinus*)
- Midwife Toad (*Alytes obstetricans*)
- Crested Tit (*Lophophanes cristatus*)
- Greater noctule (*Nyctalus lasiopterus*)
- Badger (*Meles meles*)
- Peacock butterfly (*Aglais io*)
- Fox (*Vulpes vulpes*)
- Green Lizard (*Lacerta viridis*)
- Roe Deer (*Capreolus capreolus*)

For each species, the most noteworthy aspects have been selected in terms of their biology and ecology that provoke a real environmental sensitivity in the recipient and a greater interest in discovering new knowledge. For the elaboration of the graphic design, images of the species were also selected with a high-quality graphic that allows each figure to be visually highlighted.

SECOND: Development of exhibition material

From the work carried out previously, during the creation phase, the literary form was selected to relate the most significant aspects of each of the species. For this, a form of **micro-story** has been chosen, of short length (no more than 100 words per text), where through a specific event that happens in the daily habits of each species, such as predation processes, flight, courtship or reproduction, behaviours towards other species or their populations, we have generated a scene where the reader visualizes as if it were a **movie scene**. In some of the species, however, morphological aspects have been highlighted and a more descriptive account has been chosen. What is common to all the stories are the **continuous similes** with **current human and social aspects** where the recipients of young ages feel identified. Likewise, **the titles** are part of the text, introducing the name of the species in its popular form and adding a phrase that introduces and forms part of the microhistory.

From the created texts, the **graphic design** was selected. To do this, we have worked with **CmásC Publicidad**, with Coral Corona, where we have been found the aesthetics of the comic combined with the real image of each species. It was chosen to also place the scientific name to taxonomically locate each of them.

To complete the material and close it with a structure, it has been completed with **a beginning and an end**, where the proposal is presented on the beginning canvas, addressed to the school recipient in a current tone and making allusions to great stories already created in cinema or literature and provoking motivation in the recipient. On the other hand, the last poster presents the **Quarry Life Award and the HeidelbergCement Group**, alluding to the Arrigorriaga quarry, from the Rezola Cements Factory.



The **choice of physical support** for the Spanish version must meet certain requirements such as being easy to use and mobile for educators and allowing them to roam between centers and classrooms. It must also be of adequate size to be read without effort and its graphic design in large dimensions that capture the attention of the public. For this reason, roll-ups with a metallic aluminum support and graphic canvas made of laminated material were chosen, which are accompanied by a cover with a handle to facilitate their transport.



The **final result** of the designed material can be assessed in detail through these two options:

- Link (web support whose creation process will be described below):

<https://quarrylifeaward202.wixsite.com/quarrylifeaward2022/blank-3>

- Specific access for this report via QR code:



THIRD: DISCLOSURE AND IMPROVEMENTS TO THE PROJECT

Once the complete design of the material had been completed and the version in Spanish had been edited, the dissemination and recruitment phase began to disseminate the project among the local educational community of Arrigorriaga. In this phase a difficulty has been found that has led the project to turn to a new way of dissemination and communication. The teaching work of the local community is carried out in Basque, the official language of the community, so carrying out activities and active and direct interpretations with the educational community of the territory has not been possible as it is not an easy-to-use language. An attempt was made to work through other channels, contacting the Town Halls of the municipalities and disseminating the project through non-formal education programs already established with school audiences, but the resolution was the same, there was only the possibility of carrying out dynamic activities in Basque.

Therefore, a solution was sought by providing the exhibition material in **Basque** and, given the characteristics of the Quarry Life Award, also in **English**:



Versions in these two languages are **available in digital format**. This provides a new advantage over physical support and is the potential for replication and universality of the material, being able to use it in any facility or center both within the territory and outside it.

The difficulty of being able to work directly with the educational centers of the territory and carry out dynamic sessions with the exhibition material given the linguistic distance with which the team has found, has redirected the project towards an implementation of a new support that allows easy access to exhibition materials in all languages. For this reason, a **specific project website** has been created that allows any teacher to download the material to work in the classroom or online:

<https://quarrylifeaward202.wixsite.com/quarrylifeaward2022>

The **home page** introduces the project and also presents the QLA and the business group. In fact, both images give access through a click to their own websites.



Selecting the activities section, the teacher or person in charge can access the material in the three languages, under a previous presentation and description of the work carried out.



However, and as added work and improvement to the project, there is access to a fourth material designed for this project, which is a **Teaching Support Manual**, so that the educator who works on the expository content can carry out, in a complementary way, activities in order to make the recipient aware of a broader knowledge of the biology and ecology of the indicated species.

In this way, the exhibition interpretation that can be complemented with environmental education activities. The Manual describes for each of the species an activity aimed at the teacher with content to work on autonomously.



Discussion:

Despite having fulfilled the objectives set in the project both in the educational field, working from a literary line that contributes to environmental and artistic innovation, uniting both prisms, the social field has been hampered by not being able to carry out direct dissemination by our material team working directly with the territory given the language difficulties. This has limited the project assuming an educational frontier.

However, an attempt has been made to resolve the situation in such a way that it benefits all the factors involved in carrying out the translation into both Basque and English, in such a way that it is made available to all educational centres, local administrations and associative networks of the operating environment and allows the business group to have it internally in both digital and physical format in Spanish, in Basque for educational groups in the Basque Country and in English for the rest of Europe. In addition, the proposal to design the exhibition in 3 languages allows an amplification of the social factors that it can reach, being able to work on the material in a self-editable or projectable way online in bilingual educational centers, in others Spanish centers and in European centers.

The material in all its versions, including the physical one, remains at the disposal of the HeidelbergCement Group and, therefore, of the Cementos Rezola, including the Museum, taking into account the educational programming aimed at the captive public that they carry out. As well as any query that can be made to our team during the time the material remains exposed through the email enabled and included in the designed website: quarrylifeaward2022@gmail.com.

With this environmental dissemination material, it is intended that both the company and the Cementos Rezola operation can give added value to their line of **environmental and social responsibility**, taking into account that the project intends to contribute as an environmental innovation tool in order to be presented and disseminated in conferences and environmental education meetings. In addition, it remains as a reference to be replicated and extrapolated to other operations of the company and international educational projects that mean an optimization of the lines of citizen participation, thus increasing the social value of the company

Final conclusions:

The engagement to ecological conservation towards the environments where business activities are carried out and maintained for years, must go through the inclusion of educational and social programs and actions that have a communicative effect on the technical and scientific actions that are carried out, both to communicate the real image of the contribution to the environment in order to raise awareness and make the local population aware of the environmental responsibility that the company maintains with the ecosystems. Therefore, evaluating and selecting this project for its development and completion has been a motivational starting point for our team. It has been tried to achieve all the proposed objectives, with special emphasis on the proposal for environmental innovation through literary work that converges with scientific work on the biology and ecology of the environment of the farm. For this reason, this project combines art and nature as ways of educational development, trying to contribute to environmental education through a line of work that has not been carried out until now that innovates and includes new formulas for environmental disclosure. Thank the support received for the project by the business group under this prism.

Sometimes, the influence of social factors can limit the opening of new projects. However, the search for solutions and the adaptability to the circumstances have meant that this project can be resolved and amplified to another extent, leaving the doors open for new avenues of dissemination towards the future of the company and replicable in other geographical points of the world. country.

Lastly, our candidate team would like to thank for having had the opportunity to develop the project throughout these months, the support from those responsible for the HeidelbergCement Group and the members of the Jury for their time and dedication to our project.

To be kept and filled in at the end of your report

<p>Project tags (select all appropriate):</p> <p>This will be use to classify your project in the project archive (that is also available online)</p>	
<p>Project focus:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Beyond quarry borders <input checked="" type="checkbox"/> Biodiversity management <input checked="" type="checkbox"/> Cooperation programmes <input checked="" type="checkbox"/> Connecting with local communities <input checked="" type="checkbox"/> Education and Raising awareness <input type="checkbox"/> Invasive species <input type="checkbox"/> Landscape management <input type="checkbox"/> Pollination <input type="checkbox"/> Rehabilitation & habitat research <input type="checkbox"/> Scientific research <input type="checkbox"/> Soil management <input type="checkbox"/> Species research <input checked="" type="checkbox"/> Student class project <input type="checkbox"/> Urban ecology <input type="checkbox"/> Water management <p>Flora:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Trees & shrubs <input type="checkbox"/> Ferns <input type="checkbox"/> Flowering plants <input type="checkbox"/> Fungi <input type="checkbox"/> Mosses and liverworts <p>Fauna:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Amphibians <input checked="" type="checkbox"/> Birds <input checked="" type="checkbox"/> Insects <input type="checkbox"/> Fish <input checked="" type="checkbox"/> Mammals <input type="checkbox"/> Reptiles <input type="checkbox"/> Other invertebrates <input type="checkbox"/> Other insects <input type="checkbox"/> Other species 	<p>Habitat:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Artificial / cultivated land <input type="checkbox"/> Cave <input type="checkbox"/> Coastal <input checked="" type="checkbox"/> Forest <input checked="" type="checkbox"/> Grassland <input type="checkbox"/> Human settlement <input checked="" type="checkbox"/> Open areas of rocky grounds <input type="checkbox"/> Recreational areas <input type="checkbox"/> Sandy and rocky habitat <input checked="" type="checkbox"/> Scree <input checked="" type="checkbox"/> Shrub & groves <input type="checkbox"/> Soil <input type="checkbox"/> Wander biotopes <input type="checkbox"/> Water bodies (flowing, standing) <input type="checkbox"/> Wetland <input type="checkbox"/> Woodland <p>Stakeholders:</p> <ul style="list-style-type: none"> <input checked="" type="checkbox"/> Authorities <input checked="" type="checkbox"/> Local community <input checked="" type="checkbox"/> NGOs <input checked="" type="checkbox"/> Schools <input type="checkbox"/> Universities