

# ACTION PLAN FOR FAUNA RECOVERY CONNECTED WITH QUARRY RESTORATION

SECIL

Portugal



**OBJECTIVE** The Action Plan aims to promote conditions, in the medium and long-term, to promote the process of natural (re)colonization through actions that focus on the restoration of the structure and functioning of the original ecosystems.

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**CONTEXT** Fauna plays an important role in the restoration of quarries, acting as a seed disperser for several species, promoting spontaneous regeneration of vegetation, or in controlling pests.

How to promote the recolonization of fauna from natural areas to the new restored areas?

The University of Évora together with SECIL defined a strategy to promote colonization in the new restored areas by the fauna species/groups from the surrounding areas.

The strategy of the Action Plan relies on an adaptive management program, with periodic monitoring of fauna and continuous evaluation of actions' effectiveness.

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**SOLUTIONS** In 2007 SECIL introduced a fauna component into its Landscape Rehabilitation Plan with the aid of a team of researchers from the University of Évora who are assessing the occupation rates of fauna in the restored areas. The first phase of the study aimed to characterize and evaluate the occupation level of fauna in the restored areas, after 25 years of revegetation, and compare with natural surrounding areas.

The criteria for selecting the fauna communities were the ability to act as bio-indicators of habitat quality, relevance in the early stages of ecological succession (e.g. seed dispersers) and threatened species.

After the 1st phase, the baseline referential data was used to define an Action Plan for fauna recovery connected with the existing Landscape Rehabilitation Plan. The objective of the Action Plan is to create conditions, in the medium and long-term, to promote the process of natural (re)colonization through actions that focus on the restoration of the structure and functioning of the original ecosystems.

Actions:

- Creation of artificial ponds.
- Creation of nursery ponds.
- Bird nesting boxes.
- Bat boxes.
- Stone piles.
- Stone walls.

A monitoring program was designed to evaluate the effectiveness of the implemented actions and to assess fauna populations' status.

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## OUTCOMES

Results of differences actions:

Creation of artificial ponds

Target group: Mammals

The absence or unavailability of surface water is a limiting factor that can directly affect the presence of several fauna groups. Increasing the availability of this resource in restored areas can attract fauna to these locations.

Proportion of monthly visits to the artificial pond by terrestrial mammals and bats, highlighting that its use is higher in the hotter and drier months. Examples of detected species:

- *Oryctolagus cuniculus*
- *Sus scrofa*
- *Herpestes ichneumon*
- *Vulpes vulpes*
- *Genetta genetta*

Bird nesting boxes

Target group: Birds

Nest boxes provide safe nesting (by decreasing nest predation) and shelter for birds. Due to the scarcity of old trees with nesting cavities in recently restored areas,

increasing the availability of nest boxes will increase nesting possibilities for many species that are otherwise not attracted to the area.

The nest boxes installed were of several types, with different sized and shaped entrance holes in order to attract different species of passerines.

Relationship between species observed and nest box type occupied. The species that have occupied the nest boxes the most are: *Parus major*, *Cyanistes caeruleus* and *Lophophanes cristatus*.



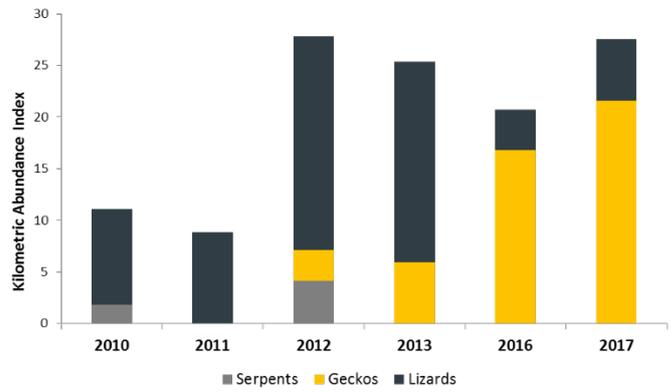
Stone walls

Target group: Reptiles

Stone walls are a support technique used in the process of slope construction. From an ecological perspective, they have advantages for fauna as they provide shelter and protection for various species in the spaces created by the irregularity of the stones in the walls, as well as promoting the dispersion of individuals.



Stone wall construction consists of various rows of stones piled on top of each other along the length of each bench. The walls with greatest vegetation cover seem to be the most used by fauna.



Graphic 1. Abundance of each group of reptiles

Abundance of each group of reptiles found in stone walls over the years (Graphic 1). In addition to a gradual increase in the use of the stone walls over the years, there also appears to be a change in the composition of the reptile community using these structures.



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## **PARTNER**

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