



Autonomous Region of the Azores
Regional Secretariat for the Environment and Climate Action

LIFE IP Azores Natura (LIFE17 IPE/PT/000010)

Progress Report

covering the project activities of sub-action C6.1 in 2022/2023

Reporting Date

31/12/2023

Project:



Coordinating Beneficiary:



GOVERNO
DOS AÇORES

Secretaria Regional do Ambiente
e Alterações Climáticas

Associated beneficiaries:



GOVERNO
DOS AÇORES

Direção Regional do Ambiente
e Alterações Climáticas



GOVERNO
DOS AÇORES

Direção Regional
de Políticas Marítimas



Estância de Parques
para o Estudo das Ruínas



La Palma
RESERVA MUNDIAL
DE LA BIOSFERA

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1. Technical part

1.1. Action C6 – Implementation of integrated conservation works for seabirds

1.1.1. Sub-action C6.1 – Restoring islet habitats for seabirds

This sub-action stipulates the implementation of a set of conservation measures that will allow improving the conservation status of 7 seabird species protected by the Bird Directive by improving habitat conditions and implementing other nesting support measures on several islets in the Azores archipelago. The implementation of these objectives has been carried out in collaboration between the beneficiaries SPEA, DRPM, DRAAC and SRAAC, and the teams of the respective Natural Parks, until 31 December 2023, when SPEAs planned input in this sub-action ceased, in line with what had been stipulated in the Grant Agreement.

Sub-action C6.1 focuses on 5 procellariiform species (*Calonectris borealis*, *Bulweria bulwerii*, *Hydrobates castro*, *Hydrobates montei*, and *Puffinus lherminieri*) and 2 charadriiform species (*Sterna hirundo* and *Sterna dougallii*). The islets on which this task is being carried out are Praia and Baixo islets (Graciosa), Vila Islet (Santa Maria), and Topo Islet (São Jorge). The present report describes the activities carried out in 2022 and 2023, specified separately for each task, including mapping of all interventions.

Regarding Topo Islet (also covered by action C1.1), the continuing presence of livestock (152 sheep in January 2024) is impeding the implementation of the project's habitat restoration tasks. The date of their removal continues to be unknown, given that a new process has started in the Court of Appeal in Lisbon, in which the former leaseholder claims that he does not own any land on which he can keep the above-mentioned livestock. Nevertheless, **103 artificial nests for procellariiformes were installed** on the islet in July 2023.

Task 1 – Restoration of seabird habitat

This task targets habitat restoration through the reintroduction of flora species that would originally have formed part of the floristic composition of the islets through plantings or direct sowing (Table 1). On all islets, the original habitats would have been:

- 1210 - Annual vegetation of drift lines;
- 1220 - Perennial vegetation of stony banks;
- 1250 - Vegetated sea cliffs with endemic flora of the Macaronesian coasts.

It is possible that those species belonging to the priority habitat 4050* (Endemic Macaronesian heaths), that are particularly hardy in rough weather conditions (strong winds and saline spray), would have originally existed on the islets, although we were not able to find historical photographic records to support this notion. For this reason, it was decided that the woody species *Erica azorica*, *Morella faya*, and *Juniperus brevifolia* (the exact species depending on the islet) would be experimentally introduced through direct sowing, to test whether they would (re-)establish without having to waste resources on propagation and transport, given that the survival rate after planting could potentially be very low.

Table 1. Flora species to be reintroduced or reinforced on the islets targeted by sub-action C6.1.

Species	Praia Islet	Baixo Islet	Vila Islet	Topo Islet
<i>Ammi seubertianum</i>			x	
<i>Asplenium marinum</i>			x	x
<i>Azorina vidalii</i>			x	x

Species	Praia Islet	Baixo Islet	Vila Islet	Topo Islet
<i>Crithmum maritimum</i>	x	x	x	x
<i>Daucus carota</i> subsp. <i>azoricus</i>		x	x	x
<i>Erica azorica</i>	x	x	x	x
<i>Euphorbia azorica</i>	x	x	x	x
<i>Festuca petraea</i>			x	x
<i>Frankenia pulverulenta</i>	x	x	x	x
<i>Limonium vulgare</i>			x	
<i>Lotus azoricus</i>			x	
<i>Morella faya</i>	x			
<i>Myosotis maritima</i>	x	x	x	
<i>Solidago azorica</i>	x	x		
<i>Spergularia azorica</i>	x	x		x
<i>Tolpis succulenta</i>	x	x		

Within the frame of this sub-action, an additional **5.12 kg of seeds of the target species have been collected in 2022 and 2023** (Table 2). Species that produce a large quantity of seeds, which are easy to collect, will be reintroduced to the islets by direct sowing (i.e. *Daucus carota* subsp. *azoricus*, *Erica azorica*, *Festuca petraea*, *Frankenia pulverulenta*, *Morella faya*, *Solidago azorica*, and *Spergularia azorica*), whereas species which produce a small quantity of seeds will be propagated at the Botanical Gardens of Faial. Seeds that are destined for direct sowing are being stored in a ventilated place in the facilities of the respective Natural Park until sowing during the spring season. An exception is Topo Islet, where it was decided that habitat restoration would exclusively be carried out through direct sowing, as the microclimate on the islet is particularly arid and exposed to strong winds and salt spray, wherefore plantings are expected to have a very low a rate of success, making direct sowing a more viable solution.

Table 2. Quantities of seeds of target species (in grams) collected in 2022 and 2023.

Species	Graciosa	Santa Maria	São Jorge
<i>Ammi seubertianum</i>	-	31.3	-
<i>Atriplex prostrata</i>	-	220.2	-
<i>Azorina vidalii</i>	161	359.9	150
<i>Crithmum maritimum</i>	-	635.9	146
<i>Daucus carota</i> subsp. <i>azoricus</i>	101	976.2	42
<i>Erica azorica</i>	10	-	268
<i>Euphorbia azorica</i>	11	1	-
<i>Festuca petraea</i>	-	633.7	428
<i>Limonium vulgare</i>	-	102.8	-
<i>Lotus azoricus</i>	-	200.6	6
<i>Morella faya</i>	238	-	-
<i>Myosotis maritima</i>	12	-	4
<i>Plantago coronopus</i>	-	248.5	-
<i>Solidago azorica</i>	41	-	-
<i>Spergularia azorica</i>	70	-	14
<i>Tolpis succulenta</i>	8	-	-

The milestone “1st restoration activity accomplished by 31 December 2022” was achieved with the first **sowing interventions**, as listed in Table 3. In the case of *Asplenium marinum* on Vila Islet, the spores of this fern species were spread in exposed rock recesses.

Table 3. Direct sowing carried out on Praia, Baixo and Vila Islets in 2022 and 2023.

Islet	Year	Month	Species	Quantity (g)
Praia	2022	October	<i>Morella faya</i>	na
Baixo	2022	October	<i>Erica azorica</i>	na
	2022	October	<i>Solidago azorica</i>	na
Vila	2022	October	<i>Asplenium marinum</i>	na
	2023	April	<i>Daucus carota</i> subsp. <i>azoricus</i>	326.9
	2023	April	<i>Festuca petraea</i>	237.5
	2023	April	<i>Lotus azoricus</i>	44.8
	2023	April	<i>Plantago coronopus</i>	16.2
Total				+625.4

Planting activities started in 2023 as listed in Table 4.

Table 4. Plantings carried out on Praia and Vila Islets in 2023.

Islet	Species	No. of individuals
Praia	<i>Crithmum maritimum</i>	236
	<i>Myosotis maritima</i>	42
Vila	<i>Ammi seubertianum</i>	35
	<i>Azorina vidalii</i>	145
	<i>Lotus azoricus</i>	341
Total		799

During the work on Vila Islet, the necessity to install a system for the collection and storage of rainwater to be used for planting activities became evident. To this end, the following material has been purchased:

- High-density polyethylene water tank;
- 2 m x 3 m tarpaulin.

During the next field trip, the water collecting system will be installed. Furthermore, the AOs intend to build a composter in a rocky area to store and contain the removed invasive species plant material, thus preventing it from being dispersed by the wind.

Task 2 – Other nesting support measures

In July 2023, 103 artificial nests were installed in rows in various locations in the northeastern part of Topo Islet (Figure 1 and Figure 2). As on the other islets, nests with two different entrance hole sizes were installed to reduce inter-specific competition: **51 nests with 5 cm diameter entrance holes for *Hydrobates* sp., and 52 nests with 6 cm diameter entrance holes for *Bulweria bulwerii* and *Puffinus lherminieri*.** All nests were georeferenced, and the related maps and their coordinates are delivered with this report (deliverable D117).

Frequent monitoring of natural and artificial nests has been carried out by SPEA on all islets since 2020. All the results regarding nesting success, survival rates, and artificial nest occupancy are detailed in SPEA's report on action D5.1 - Monitoring of terrestrial habitats, species and conservation problems (deliverable D164; Pipa et al., 2024). Since the beginning of 2024, DRPM has taken over the lead in the implementation of seabird monitoring, as foreseen in the Grant Agreement.



Figure 1. Artificial nests 001-051 installed for *Hydrobates* sp. and 001-0025, 052 and 053 installed for *Bulweria bulwerii* and *Puffinus lherminieri* on Topo Islet, São Jorge, in July 2023.



Figure 2. Artificial nests 026-050 installed for *Bulweria bulwerii* and *Puffinus lherminieri* on Topo Islet, São Jorge, in July 2023; damage caused by sheep is notable in the form of overturned and broken lids.

Nests were settled into the soil and fitted with stones around them, to imitate natural nesting burrows (Figure 1). In line with the proceedings on the other islands, lids have been fabricated using cement and gravel to place them onto the artificial nests, both to avoid them from being affected by strong winds and to hinder access of potential predators, such as the yellow-legged gull (*Larus michahellis*). However, weather conditions have not yet been favourable enough to transport the lids to the islet, where unloading is extremely complicated, given that there is no mooring and people often have to reach the islet by swimming. In the meantime, drone footage in January 2024 has documented that some nests have already been damaged, most likely through trampling by sheep (see Figure 2).

In July 2023, a passive acoustic survey was carried out on Topo Islet with the detection of Cory's shearwater *Calonectris borealis* (1.75 vocalizations / 10 min) and Monteiro's storm petrel *Hydrobates monteiroi* (3.5 vocalizations / 10 min). Direct nest surveys were also carried out, georeferencing both Cory's shearwater and Monteiro's storm petrel nests and confirming that both species are nesting on the islet (adults with eggs in the nest; Figure 3).



Figure 3. Natural Monteiro's storm petrel nest discovered and adult banded on 17 July 2023 on Topo Islet.

The shelter boxes for terns (*Sterna hirundo* and *Sterna dougallii*), that have the aim to provide the chicks with shelter from extreme climatic events and predation, and the tern decoys, that play a role in incentivising the birds to use the shelter boxes, have been installed during the 2022 and 2023 breeding seasons (approximately April to September).

2. Overall progress of sub-action C6.1

Overall progress of the implementation of sub-action C6.1 is generally within the timeframe defined in the project (Table 5 and Table 6), and some of the milestones, such as the installation of 150 artificial nests, were even exceeded (407 artificial nests installed, 60 tern shelter boxes built, and 20 tern decoys fabricated).

Table 5. Milestones for sub-action C6.1.

Milestone	Due date	Achieved
1 st seed collection accomplished	31/12/2019	X
100 litres of seeds collected for use in habitat restoration	31/12/2021	X
1 st nest placement	30/04/2022	✓
1 st restoration (autochthonous species planting) action accomplished	31/12/2022	✓
All nests placed	31/12/2023	✓
Habitat restoration on 32.76 ha accomplished	31/12/2025	
At least 200 plant seedlings in each location	31/12/2025	

The first milestone (1st seed collection accomplished) was achieved in July 2020, despite the due date for achievement of this milestone being 31 December 2019. However, the Technical Assistant to the Project Manager was only contracted in January 2020, and the start of the implementation of this action was planned for January 2020, wherefore seed collection could not have started before the 2020 seeding season.

Table 6. Deliverables for sub-action C6.1.

Deliverable	ID	Due date	
Intermediate report	D092	31/12/2021	✓
Map showing placement of artificial nests	D117	31/12/2022	✓
Intermediate report	D149	31/12/2023	✓
Intermediate report	D196	31/12/2025	
Final report	D249	31/12/2027	

The present report constitutes the second intermediate report describing the developments in the implementation of this sub-action and the associated results (deliverable D149) until December 2023. Deliverable D117, namely the detailed and specific mapping of all the nests placed has been updated with the list of nests installed on Topo Islet.

Figure 4 illustrates the actual progress of the implementation in relation to the proposed timeframe.

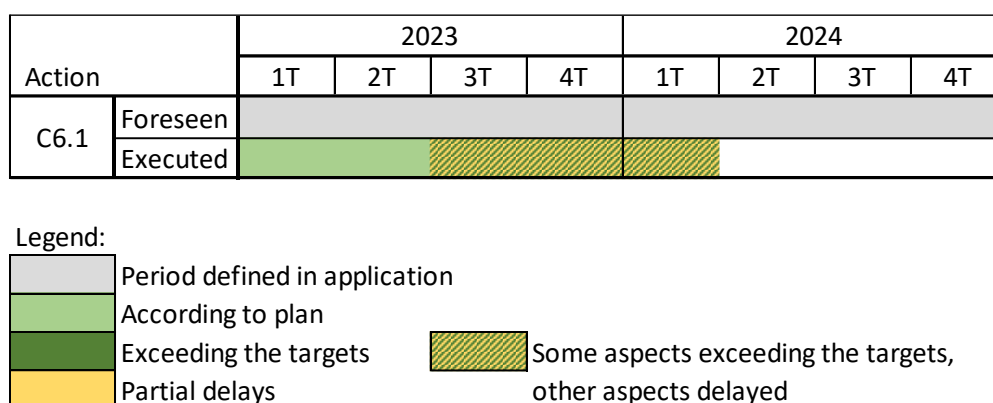


Figure 4. Gantt-chart illustrating overall progress of sub-action C6.1.

3. Bibliography

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