



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 C4.1 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
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Direção Regional
de Políticas Marítimas



Estudo de Impacto
Ambiental



La Palma
RESERVA MUNDIAL
DE LA BIOSFERA

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List of keywords and abbreviations

AAIP	Farmers’ Association of Pico Island (<i>Associação dos Agricultores da Ilha do Pico</i>)
DLR	Regional Regulatory Decree (<i>Decreto Regulamentar Regional</i>)
DROTRH	Regional Directorate for Spatial Planning and Water Resources (<i>Direção Regional do Ordenamento do Território e dos Recursos Hídricos</i>)
GesFlorA	Digital Platform for Forest Management in the Azores (Plataforma Digital para a Gestão Florestal nos Açores)
GNR	National Guard of the Republic (<i>Guarda Nacional da República</i>)
HD	Habitat Directive
SRAAC	Regional Secretary for the Environment and Climate Action (<i>Secretaria Regional do Ambiente e Ação Climática</i>)

1. Technical part

1.1. Action C4 – Implementation of integrated best practice works for habitats

1.1.1. Sub-action C4.1 – Best practice for terrestrial habitat conservation

This sub-action stipulates the implementation of various best practice interventions for the conservation of HD priority habitats, thereby contributing to the conservation of HD species on 7 islands of the Azores archipelago. The present report covers the activities carried out since the last intermediate sub-action report, namely from 01/01/2022 until 31/12/2023, separately for each of the islands, and includes mapping of all interventions.

Pico

On Pico Island, all the intervention areas require fencing to block cattle access. Table 1 shows the total length of fence initially planned and the length of fence installed up to now in each of the areas.

Table 1. Required length of fence (km) planned and installed in each intervention area on Pico Island.

Intervention area	Length of fence (km) planned	Length of fence (km) installed
Caveiro	13,78	4,9 ¹
Mistério da Prainha	1,41	1,96
Bosque da Junqueira	1,11	1,24
Pico da Urze	0,42	0,42
Total	16,72	8,5

The vandalization of the fence in the western part of the Caveiro intervention area, which was already reported in the last intermediate report, has continued, despite the installation of information boards explaining the necessity of the fence and a meeting held with local farmers at the headquarters of the Farmers' Association in May 2022. All posts along a length of 2,8 km have been stolen, and the barbed wire cut and left on site. A meeting was held with the Director of the Farmers' Association of Pico Island (*Associação dos Agricultores da Ilha do Pico - AAIP*) in February 2024, and as a result, a notification regarding the vandalization of the fence was published on the social network pages of the AAIP and the Natural Park.

The earmarks of accessible cows found within the Caveiro Natural Reserve are registered whenever Nature Wardens pass through the area, and their owners identified. Owners have been contacted by the Nature Wardens with the request to remove the cows within a few days. Additionally, a letter by the Director of Pico Natural Park has been dispatched to alert the identified owners of their obligation to remove their cows from the Natural Reserve, informing them that if cows from the same owners were caught during a subsequent visit, fines would be issued. As of now, no fines have been issued.

In the northern part of the **Caveiro** intervention area, a stone wall was built by an external contractor with locally found stones, instead of using wooden posts and barbed wire, given that it fits better into the landscape and is more durable. However, there were only enough stones available to build around 60 m of wall (Figure 1).

¹ Of which 2,8 km were subsequently completely vandalized

During the distribution of posts for the new fence section, machinery was used due to the difficult access, which led to considerable soil damage. Therefore, the damaged area was planted with 200 *Juniperus brevifolia*, 100 *Erica azorica* and 180 *Vaccinium cylindraceum* in November 2023.

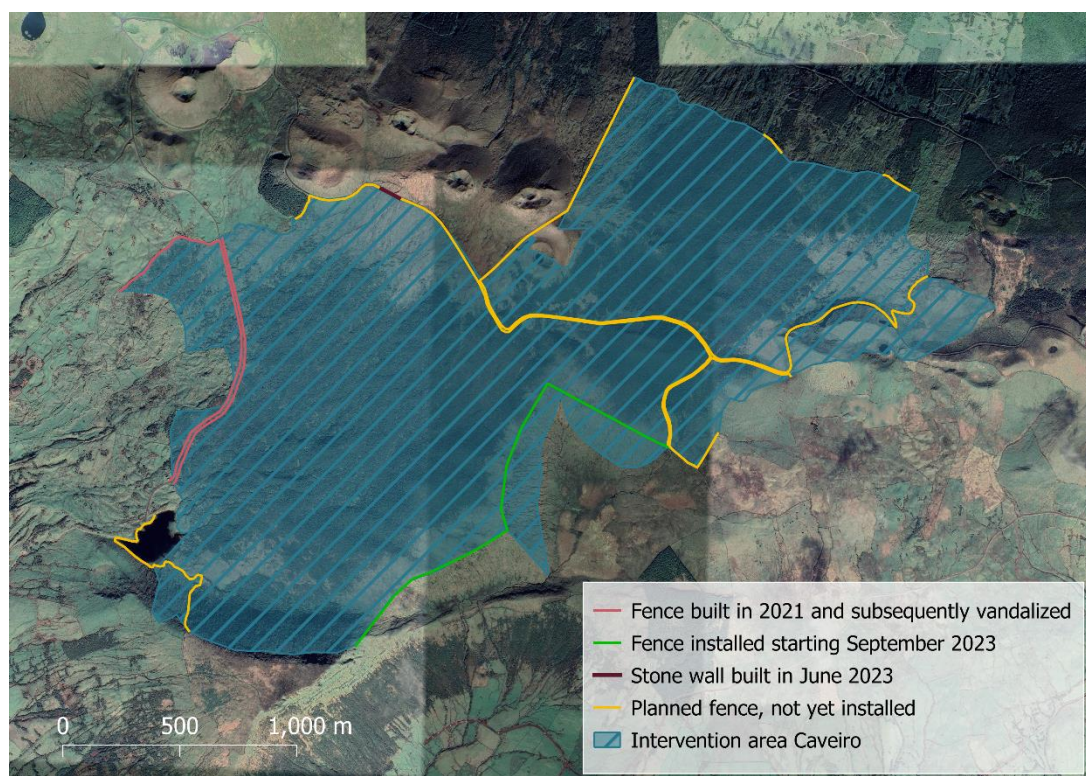


Figure 1. Fencing situation in the Caveiro intervention area, Pico Island, as of February 2024.

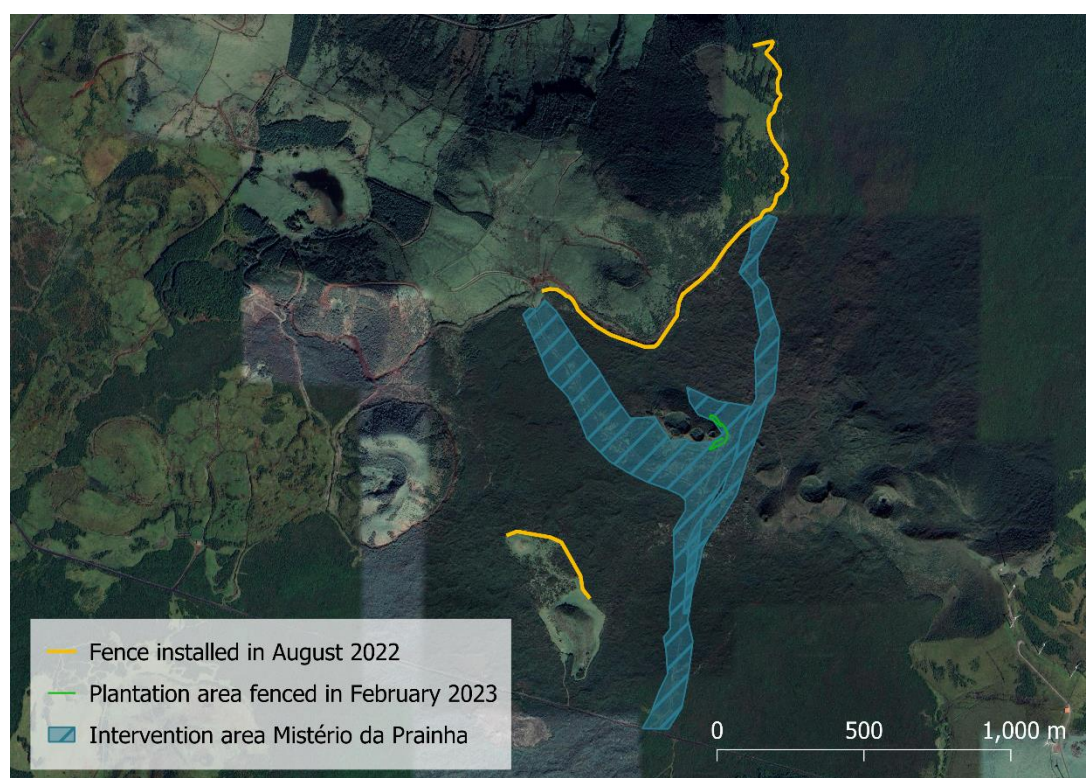


Figure 2. Fences installed in the Mistério da Prainha intervention area, Pico Island, in 2022/2023.

In the **Mistério da Prainha** area, the fence was constructed in collaboration with the owner of the adjacent pasture. Part of the fence was built in form of a stone wall with locally found stones, and the rest was built using wooden posts and barbed wire. As of February 2024, the fence is in a good state.

In August 2023, 400 *Erica azorica*, 640 *Vaccinium cylindraceum* and 800 *Viburnum treleasei* were planted in an especially fenced area in Mistério da Prainha (Figure 2).

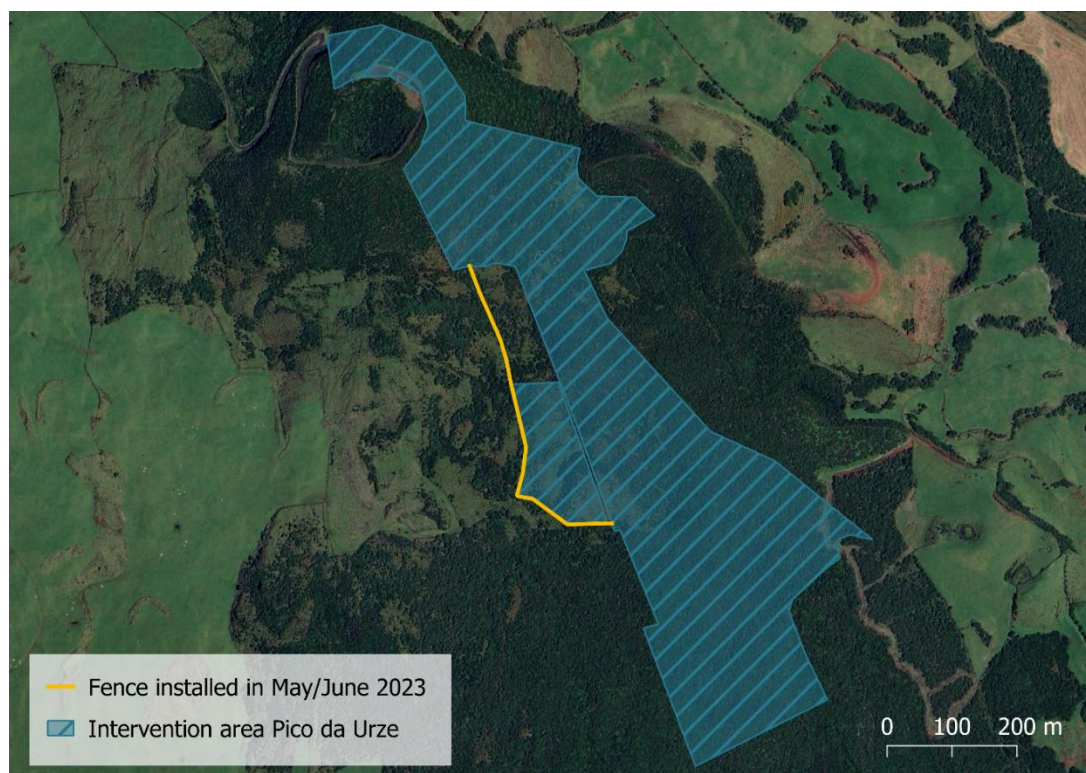


Figure 3. Fence installed in the Pico da Urze intervention area, Pico Island, in May/June 2023.

In February 2024, it was verified that the fence built in the **Pico da Urze** intervention area (Figure 3) has been cut to enable cattle to cross the area. In some areas, the fence had also been destroyed by wild goats. A herd of 35 wild goats were observed in the area. The fence has already been repaired and reinforced with a 4th line of barbed wire to prevent the passage of goats.

The same situation was verified in February 2024 in the **Bosque da Junqueira** intervention area (Figure 4), where part of the fence was damaged by wild goats. This area has also already been repaired and the fence reinforced with a 4th line of barbed wire. In another part of the Bosque da Junqueira fence, it was verified that part of the fence had been removed. Upon contact with the owner of the adjacent pasture, this person informed the Environment and Climate Action Service that he removed the posts and barbed wire after damage caused by his cows, and that he is planning to substitute it with a stone wall. A time frame for carrying out this work, however, has not been given.

Given the abundance of natural regeneration in the Bosque da Junqueira intervention area, it was decided not to plant any trees and let the area recover by itself. To monitor and document the process of habitat restoration, permanent plots were installed (Figure 5), and a first assessment was carried out in August 2023. All data are registered in a shared [database](#).

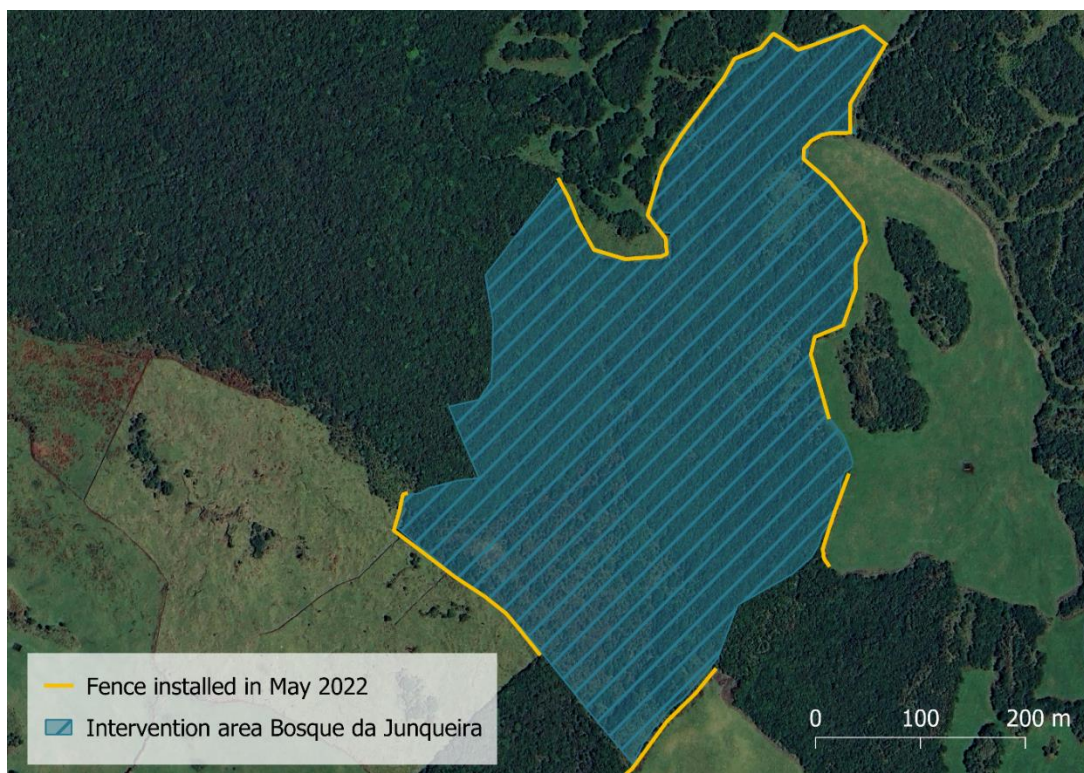


Figure 4. Fence installed around the Bosque da Junqueira intervention area, Pico Island, in May 2022.

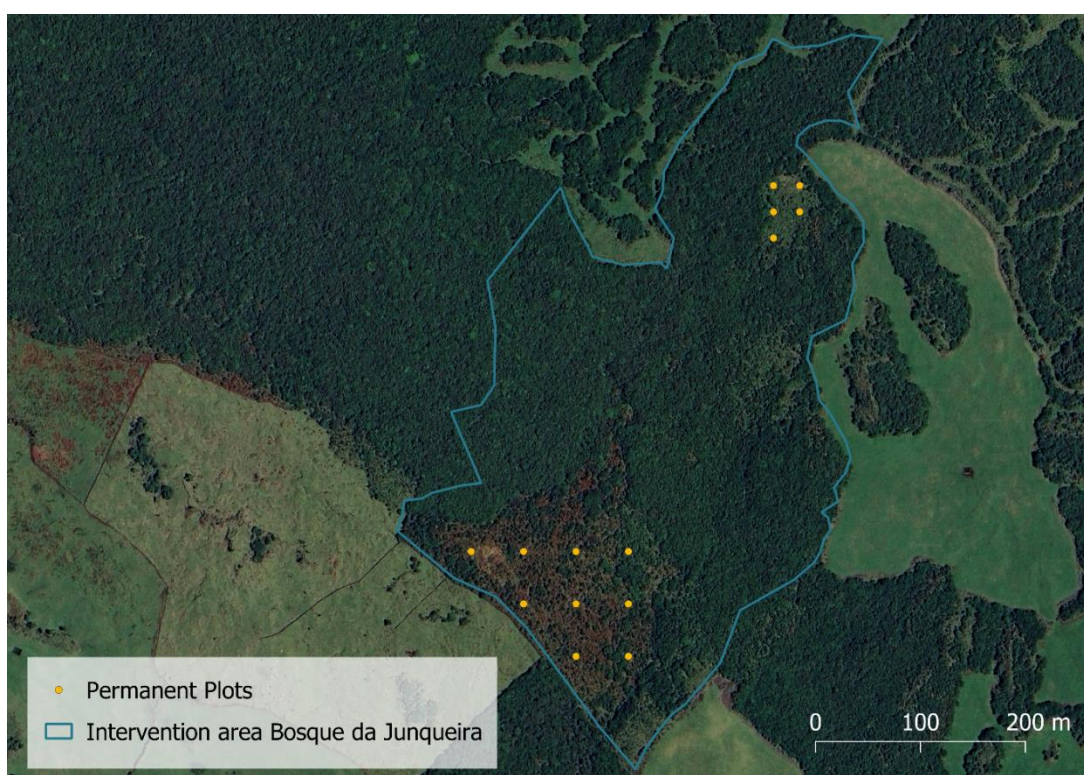


Figure 5. Permanent plots installed in Bosque da Junqueira, Pico Island, to monitor habitat restoration.

Faial

On Faial Island, the fence around the intervention area has been vandalized and subsequently repaired several times, even though local Farmers Associations and individual farmers were duly informed about the installation of the fence and its objectives. The owners of cattle found inside the area were

identified, and the National Guard of the Republic (*Guarda Nacional da República – GNR*) issued several fines. Currently, only a horse occupies the area, and as of February 2024, GNR has not been able to catch it. The last repair of the fence took place in September/October 2024, and since then, no damage has been registered.

In February 2023, an air layering experiment was carried out to propagate known individuals of *Prunus azorica*. Air layering is a technique that allows to root trees without removing them from the parent plant. It involves removing a ring of bark from a branch and placing a rooting medium, such as moist soil, around it. The branch is then wrapped in plastic to create a miniature greenhouse, which encourages the development of roots. Once the roots have formed, the branch can be severed and planted as a new tree. All air layers successfully developed roots and 23 trees were subsequently planted in the Pedro Miguel area in February 2024.

Corvo

On Corvo Island, several adjustments had to be made following the objections of local authorities to the construction of the fence during several meetings held in September 2022 and April 2023. The new fence has increased considerably in length, measuring now 7,2 km instead of 0,9 km. Construction began in September 2023; however, due to the difficult terrain and extreme weather conditions, the installation has progressed very slowly. Currently, only about 150 m of the fence are in place (Figure 6).

To speed up the implementation of restoration measures, it was decided to fence a small area in the southeastern part of the fence. The transport of woody plants from the nurseries of the Forestry Services on Flores Island is currently being organized. The Forestry Services are providing the following species and number of plants:

- *Juniperus brevifolia* – 200
- *Vaccinium cylindraceum* – 50

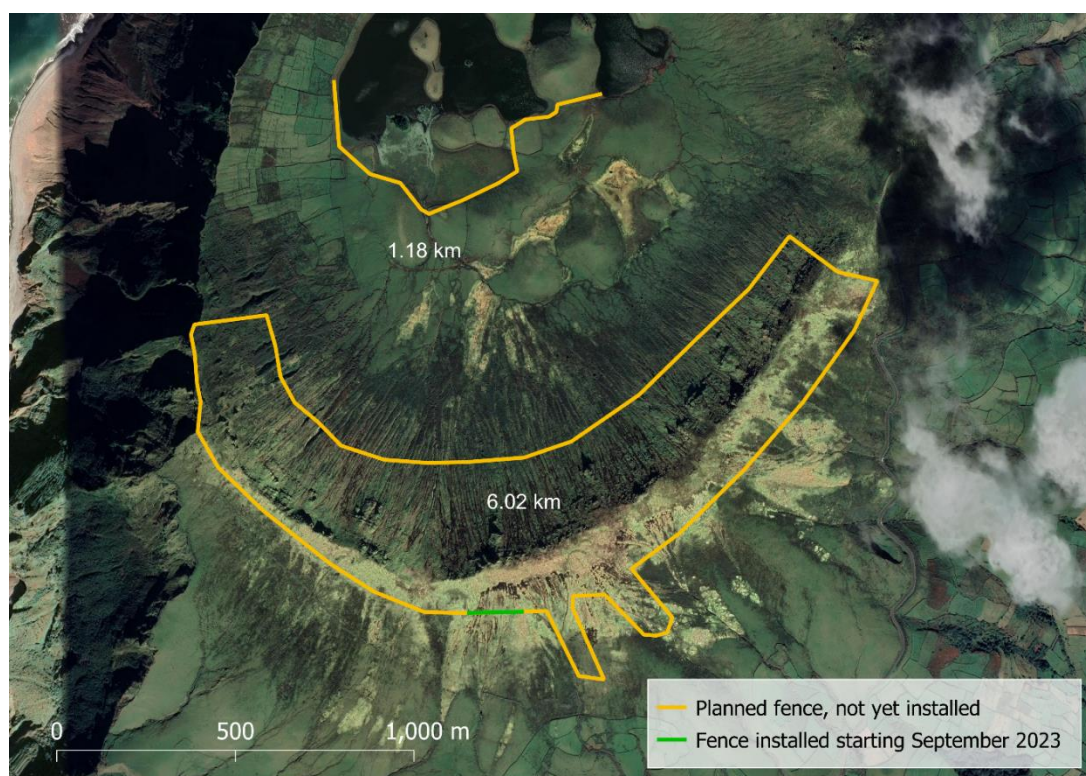


Figure 6. Fence being installed in the Caldeirão intervention area, Corvo Island, since September 2023.

Flores

Detected nuclei of invasive species in the intervention area are being removed. The removal process is solely mechanical, given that the **Caldeira Branca** intervention area is entirely within the lagoon's hydrographic basin (Lagoon Basin Management Plan, *POBHL*, DLR no. 6/2013/A), wherefore the use of chemicals is not permitted. This increases the difficulty of controlling the highly proliferate ginger lily *Hedychium gardnerianum*, which constitutes the main invasive species in the area, requiring continuous maintenance to control regeneration.

Since the beginning of the habitat restoration works, a total of 267 trees have been planted to occupy the areas where invasive species have been removed (Table 2).

Table 2. Woody species planted within the frame of action C4.1 on Flores Island.

Year	Locality	Species	Nº of individuals
2020	Lagoa Funda	<i>Erica azorica</i>	1
		<i>Frangula azorica</i>	12
		<i>Ilex perado subsp. azorica</i>	9
		<i>Juniperus brevifolia</i>	9
		<i>Prunus azorica</i>	1
		<i>Vaccinium cylindraceum</i>	9
		<i>Viburnum treleasei</i>	9
2022	Lagoa Branca	<i>Erica azorica</i>	1
		<i>Frangula azorica</i>	6
		<i>Hedera azorica</i>	3
		<i>Ilex perado subsp. azorica</i>	18
		<i>Juniperus brevifolia</i>	10
		<i>Morella faya</i>	4
		<i>Vaccinium cylindraceum</i>	56
		<i>Viburnum treleasei</i>	119

The nurseries of the Flores Forestry Services have the following plants currently available to continue habitat restoration activities:

- *Ilex perado subsp. azorica* – 385
- *Juniperus brevifolia* – 399
- *Viburnum treleasei* – 3014
- *Laurus azorica* – 479
- *Picconia azorica* – 1500
- *Frangula azorica* – 301
- *Myrsine retusa* – 12
- *Erica azorica* – 88
- *Vaccinium cylindraceum* – 55

Terceira

On Terceira Island, interventions within the frame of sub-action C4.1 have been, or will be, carried out in 10 areas: Turfeira da Lomba, Vale da Vinagreira, Lagoa do Negro, Biscoito da Ferraria, Rocha do Juncal, Quinta da Madalena, Furnas do Enxofre, Turfeira do Sanguinhal, Pico do Sanguinhal and Pico Alto e Tamujal 5. The initial project also lists the intervention areas Terra Brava and Ribeira dos Gatos under this sub-action. However, since a survey of these areas revealed that the tasks that are necessary

to be carried out there are better described by sub-action C8.1 (IAS removal), they will be included in the report relating to that sub-action. Similarly, although the interventions carried out in the Lagoa do Negro area are – according to the project description – encompassed by action C4.2 (Pilot for ecological corridor implementation), they will be included here, given that they fulfil the same general goal as interventions within the frame of action C4.1. In any case, the here described works overlap considerably with action C8.1.

In the **Turfeira da Lomba** intervention area, the removal of *Cryptomeria japonica* in 2022 created clearings of more than 200 m², and the intervened area was left to regenerate naturally. During 2023, high levels of natural regeneration were observed in these areas, wherefore invasive species control will continue to favour the regeneration of native species. The planting of native species, utilising seeds collected in the area, will depend on the progress of natural regeneration in the clearings in question.

In the **Lagoa do Negro** area, invasive species continued to be removed twice a year, in both 2022 and 2023, in an area of approximately 1,53 ha (Figure 7). The species removed were *Rubus ulmifolius*, *Crocasmia* spp., *Solanum mauritianum*, *Hedychium gardnerianum* and *Scrophularia sambucifolia*. A total of 35.958 individuals of *Cryptomeria japonica*, mostly juveniles, was also removed. In March 2022, 320 individuals of *Prunus azorica* and 80 individuals of *Ilex perado* subsp. *azorica* were planted during a volunteering activity. Four experimental plots (10 m x 10 m) surrounded by a fence were set up, within which the uppermost 15 cm of soil were removed. In October 2023, 1.400 individuals of *Calluna vulgaris* were planted on the exposed bare soil, interspersed with *Sphagnum* spp., in the attempt to restore the original habitat.



Figure 7. IAS removal in the Lagoa do Negro intervention area in 2022 and 2023.

The intervention areas **Biscoito da Ferraria**, **Rocha do Juncal** and **Vale da Vinagreira** are in close proximity of each other, and despite the orographic differences, the IAS removal work, particularly of *Rubus ulmifolius* and *Hedychium gardnerianum*, is complementary. Altogether, around 5,76 hectares were intervened between 2022 and 2023 and subsequently, maintenance work was carried out twice a year. Some trees were removed using chainsaws, others were killed with the drill & inject method; in total, 8.984 individuals of *Cryptomeria japonica* and more than 200 individuals of *Acacia*

melanoxydon were thus treated. It was planned to cut down more *Cryptomeria japonica* individuals; however, the difficult access and weight of the trees delayed the work. In June 2023, 186 individuals of *Angelica lignescens* were planted in Rocha do Juncal (Figure 8), 20 of which did not survive the end of 2023.

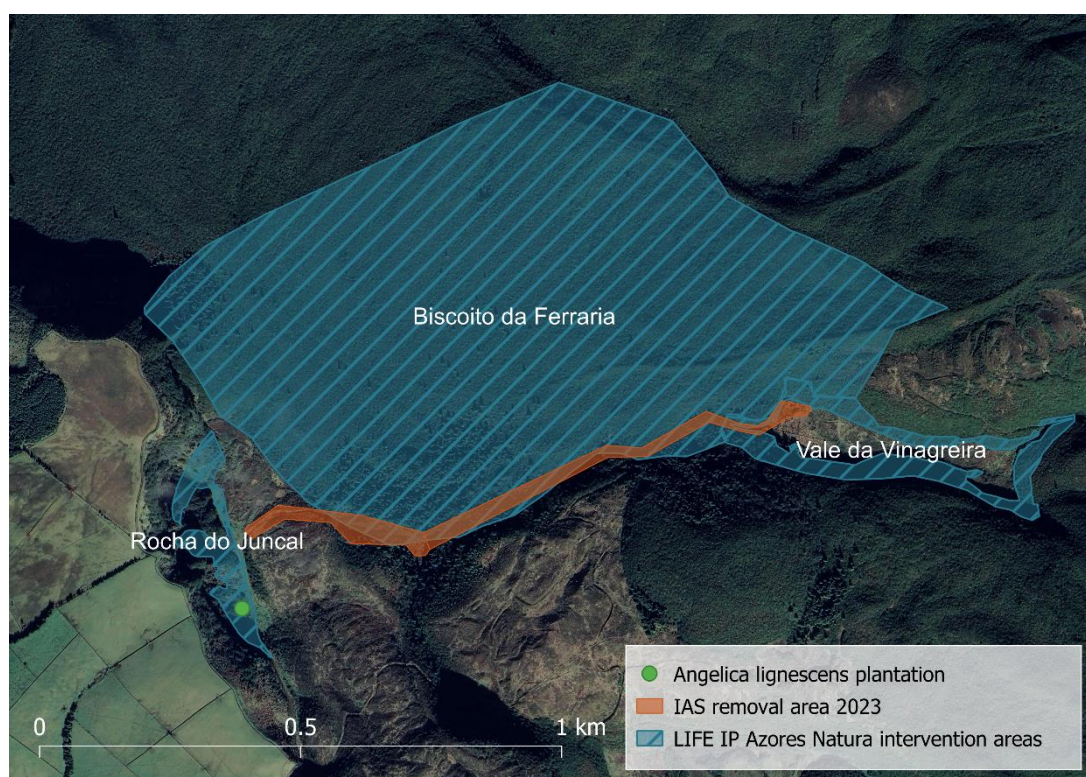


Figure 8. IAS removal and planting in the Rocha do Juncal, Biscoito da Ferraria and Vale da Vinagreira intervention areas in 2022 and 2023.

In 2022, the invasive tree species in **Quinta da Madalena** were removed or killed using the drill & inject technique. The remaining invasive species were controlled in a first intervention, and maintenance work is carried out annually. During the next fall and winter, native woody species will be planted to fill in the gaps left by the removal of the invasive species. An area next to the road is currently being used as a small building site where medium and large trees are cut into boards for use in natural engineering solutions.

In June 2023, 100 *Angelica lignescens* were planted in the **Furnas do Enxofre** intervention area, all of which have survived to date (Figure 9). *Rubus ulmifolius* was removed almost entirely from an area of 3,24 ha. Table 3 lists the woody species and number of individuals that were planted.

Table 3. Species and number of individuals planted in the Furnas do Enxofre intervention area in 2023.

Species	No. of individuals
<i>Erica azorica</i>	444
<i>Ilex perado</i> subsp. <i>azorica</i>	76
<i>Laurus azorica</i>	295
<i>Morella faya</i>	158
<i>Picconia azorica</i>	6
<i>Prunus azorica</i>	4
<i>Viburnum treleasei</i>	163
Total	1.146

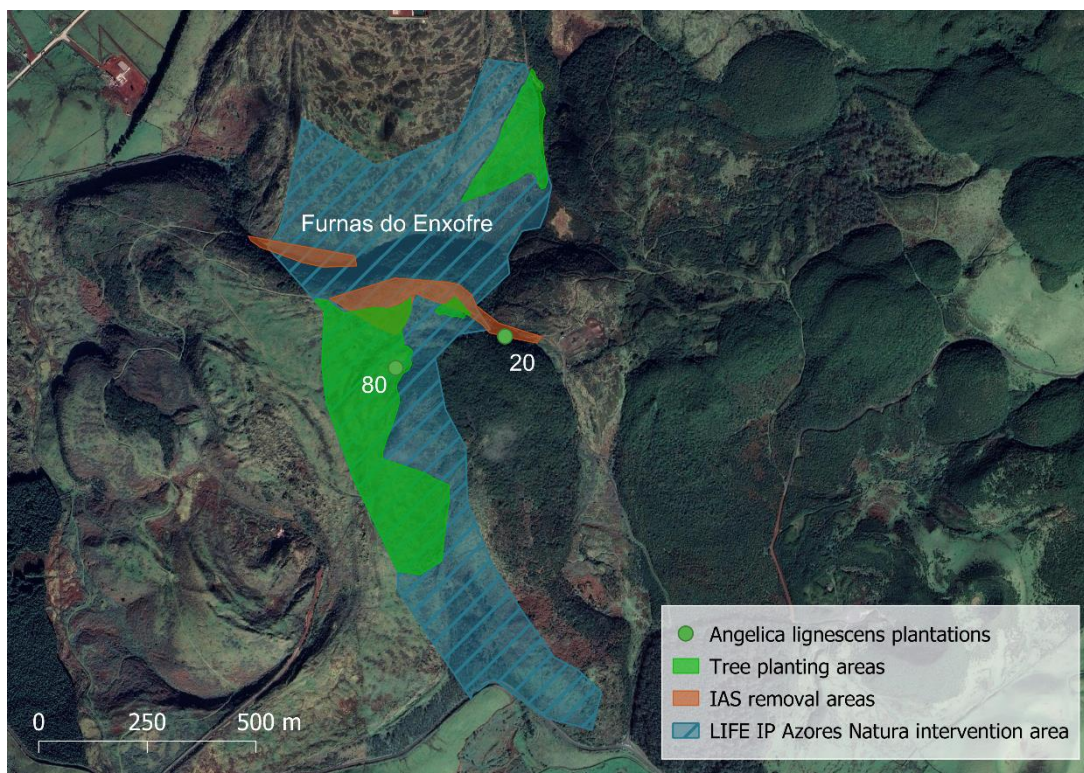


Figure 9. IAS removal and plantings in the Furnas do Enxofre intervention area in 2022 and 2023.

The **Turfeira do Sanguinhal** intervention area, with a size of 36 ha, was added during the last phase amendment request. In 2023, a total of 1.871 individuals of *Eucalyptus melanophloia* were cut down and shredded locally. Starting in the end of 2022, an area of 2,1 ha was cleaned of *Rubus ulmifolius* and *Hedychium gardnerianum* (Figure 10), and maintenance work takes place twice a year. After the eucalypt removal, spontaneous growth of elevated numbers of *Erica azorica* was observed.

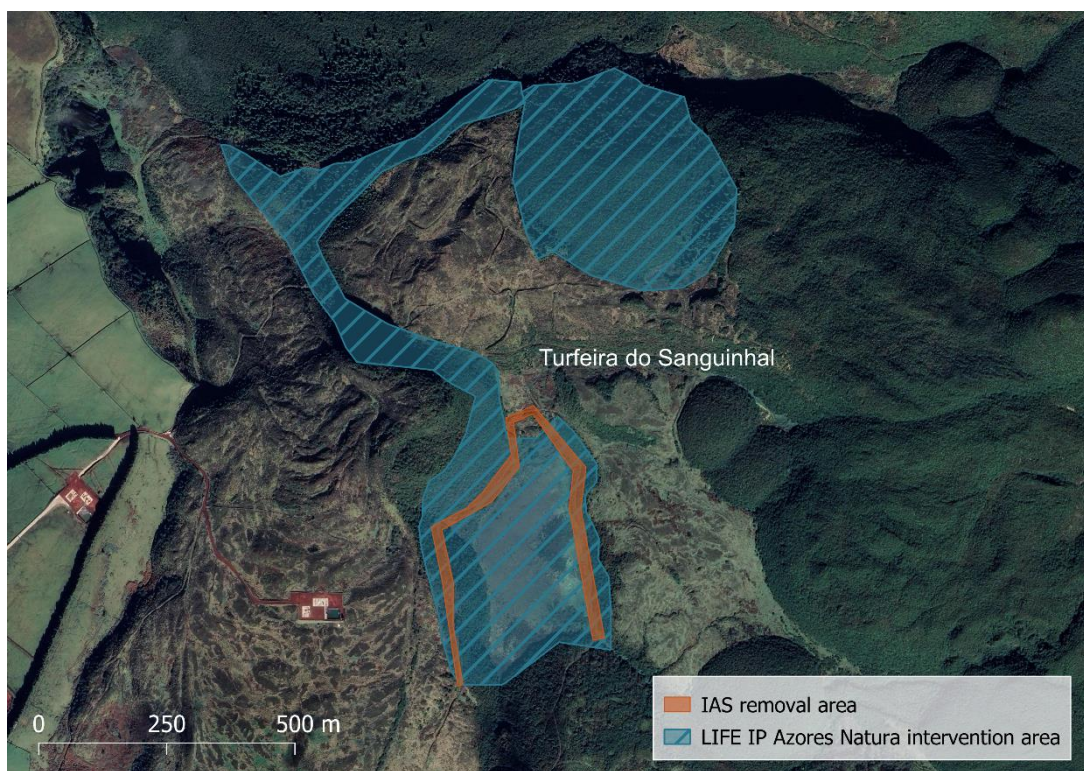


Figure 10. IAS removal in the Turfeira do Sanguinhal intervention area in 2022 and 2023.

The addition of a second intervention area, **Pico do Sanguinhal**, was approved during the Amendment at the end of Phase I, and an area of 2,48 ha was cleaned of *Rubus ulmifolius* and *Hedychium gardnerianum* in 2023 (Figure 11). This area includes an abandoned geothermal borehole surrounded by disturbed area, which is being restored through the planting of native tree species (Table 4). Intervening in this area creates a geographical continuum with other intervention areas (Biscoito da Ferraria, Rocha do Juncal, Vale da Vinagreira, Pico Alto e Tamujal 3 and Furnas do Enxofre), which will favour overall resilience of the area.

Table 4. Species and number of individuals planted in the Pico do Sanguinhal intervention area in 2023.

Species	No. of individuals
<i>Erica azorica</i>	528
<i>Ilex perado</i> subsp. <i>azorica</i>	44
<i>Laurus azorica</i>	265
<i>Morella faya</i>	112
<i>Picconia azorica</i>	34
<i>Prunus azorica</i>	9
<i>Viburnum treleasei</i>	158
Total	1.150



Figure 11. IAS removal in the Pico do Sanguinhal intervention area in 2023.

In **Pico Alto e Tamujal 5**, an area of 0,31 ha was cleaned of *Hedychium gardnerianum* (Figure 12); this area is maintained once a year to prevent the return of IAS.

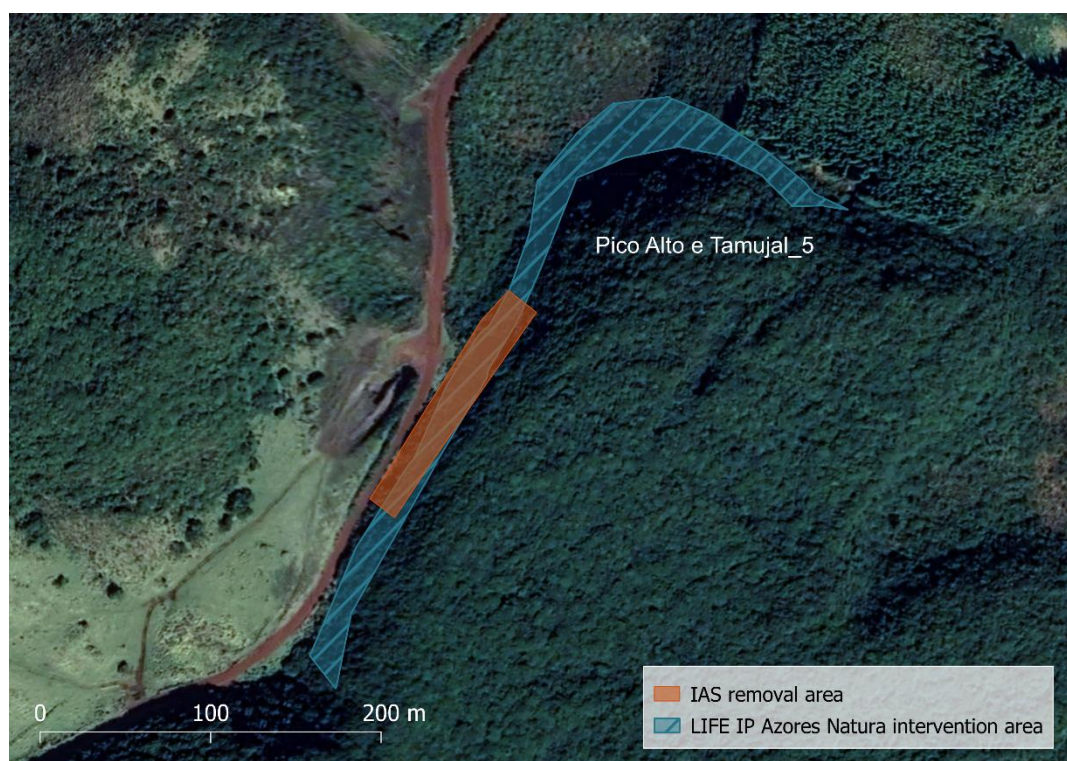


Figure 12. IAS removal in the Pico Alto e Tamujal 5 intervention area in 2022 and 2023.

São Miguel

Since the conclusion of the removal of invasive species in the **Lagoa do Fogo** intervention area in 2022, 8.194 trees have been planted in the area (Table 5). Additionally, restoration plantings took place in two further areas, namely the viewing point of Lagoa do Fogo, and Pico do Carvão. In total, 9.220 woody species have been planted in São Miguel since the last report. Data on all the interventions carried out in the Lagoa do Fogo intervention area continue to be introduced in the digital GesFlorA platform, which is managed by the Regional Directorate of Forest Resources and is a tool which public and private entities can use to elaborate their Forest Management Plans for any given spatial unit.

Table 5. Restoration plantings carried out within the frame of action C4.1 in São Miguel.

Year	Locality	Species	Nº of individuals
2022	Lagoa do Fogo	<i>Calluna vulgaris</i>	288
		<i>Erica azorica</i>	5.000
		<i>Viburnum treleasei</i>	2.200
2023	Lagoa do Fogo	<i>Frangula azorica</i>	235
		<i>Ilex perado</i> subsp. <i>azorica</i>	230
		<i>Prunus azorica</i>	241
2023	Miradouro da Lagoa do Fogo	<i>Calluna vulgaris</i>	40
		<i>Erica azorica</i>	584
		<i>Frangula azorica</i>	27
		<i>Viburnum treleasei</i>	100
2023	Pico do Carvão – Sete Cidades	<i>Erica azorica</i>	75
		<i>Laurus azorica</i>	119
		<i>Morella faya</i>	81
Total			9.220

São Jorge

In the **Fajã dos Cubres** intervention area on São Jorge Island (Figure 13), the opening of the stone walls existing in the Cubres Lagoon has been finalized. An unexpected effect was a proliferation of filamentous algae of the genus *Chaetomorpha* sp. that seems to have been caused by the increase in water flux. Water analyses have been requested from DROTRH, to monitor the evolution of the Cubres lagoon. A Zodiac boat was acquired to facilitate the removal of the algae.

The construction of two bird observatories in Fajã dos Cubres, as described in the respective Operational Plan, has been considerably delayed since SRAAC decided that they had to be redesigned by an architect to standardise structures installed by SRAAC in the archipelago. In April 2023, the management team of LIFE IP Azores Natura was informed that the project was in the process of being finalised; however, several enquiries since, the last one of which in January 2024, have not yielded any further information.

Regarding the restoration of native woody vegetation in the Fajã dos Cubres, 70 individuals of *Morella faya* have been planted since the last report.

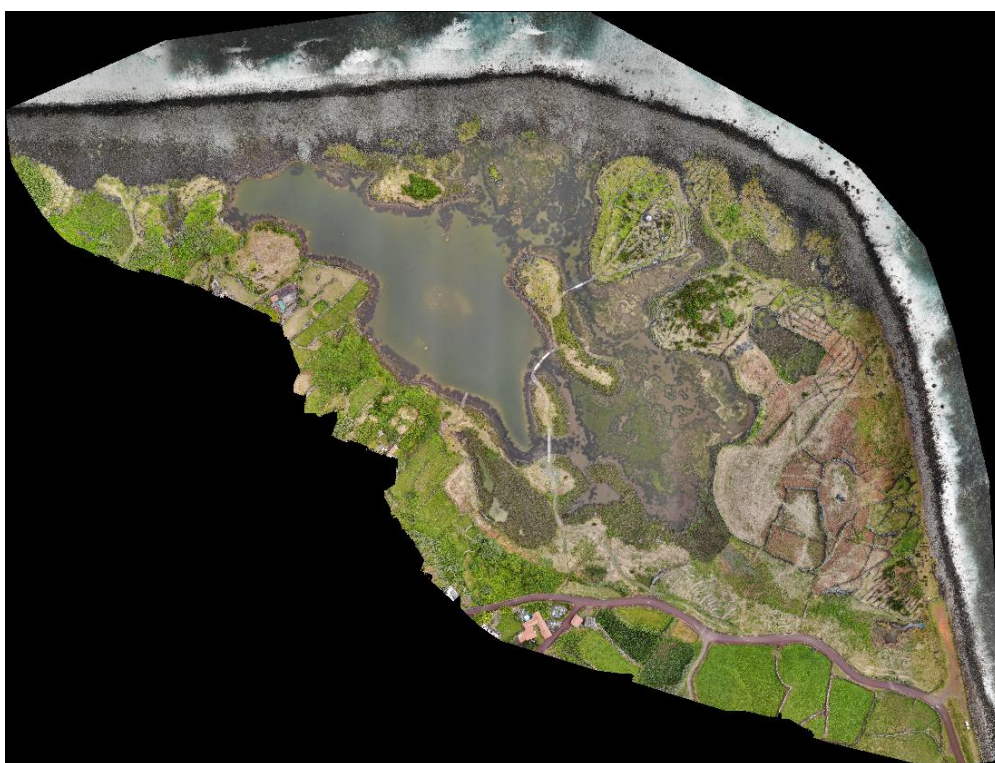


Figure 13. Orthophoto of the Fajã dos Cubres intervention area, September 2023.

2. Overall progress of sub-action C4.1

Overall progress of the implementation of sub-action C4.1 is within the timeframe defined in the project, and all but one due milestone and all due deliverables have been achieved (Table 6). The reason for not having achieved the milestone of “all cattle fences placed until 31 December 2023” has been discussed extensively.

Table 6. Milestones for sub-action C4.1.

Milestone	Due date	Achieved
1 st habitat restoration activity implemented	31/12/2020	✓
Habitat restoration action implemented on 7 islands	31/12/2022	✓
All cattle fences placed	31/12/2023	X
All <i>Cryptomeria japonica</i> within sub-action intervention areas removed	31/12/2024	

The present report constitutes the second intermediate report describing the developments in the implementation of this sub-action and the associated results in the period 01/01/2022 – 31/12/2023 (deliverable D290), including the detailed and specific mapping of all interventions (update of deliverable D89; Table 7).

Table 7. Deliverables for sub-action C4.1.

Deliverable	ID	Due date	Achieved
Intermediate report	D88	31/12/2021	✓
Detailed and specific mapping of all interventions	D89	31/12/2021	✓
Intermediate report	D290	31/12/2023	✓
Intermediate report	D192	31/12/2025	
Final report	D245	31/12/2027	

Figure 14 illustrates the actual progress of the implementation in relation to the proposed timeframe.

Action		2023				2024			
		1T	2T	3T	4T	1T	2T	3T	4T
C4.1	Foreseen								
	Executed								

Legend:

	Defined period in application
	Implementation according to plan
	Partial delays

Figure 14. Gantt-chart illustrating overall progress of sub-action C4.1.