



#### C4 - Action Report with data on IAS control effectiveness

Action C4 refers to the Complementary conservation works for Invasive Alien Species (IAS) control/eradication in concrete conservation areas and buffer zones, with respect to invasive fauna and flora.

This action, part of LIFE VIDALIA conservation actions, complements the works undertaken within actions C1, C2 and C3 and aims the control and eradication of IAS in accordance to best practice methods, while also applying new approaches to achieve results, in a pilot and demonstration perspective, in order to promote replication.

During the monitoring works carried out previously to the design of the project, many IAS were identified in what has then become LIFE VIDALIA intervention Areas. Plants like *Aptenia cordifolia*, *Arundo donax*, *Carpobrotus edulis*, *Cyrtomium falcatum*, *Drosanthemum floribundum*, *Paspalum vaginatum*, *Stenotaphrum secundatum*, *Salpichroa origanifolia* and *Tetragonia tetragonioides* were some of the IAS identified. As for fauna, rodents were considered the main threat to the survival of *Azorina vidalii*, *Lotus azoricus*, and their companion species.

During LIFE VIDALIA lifetime, a total area of 627 485 m<sup>2</sup> was intervened for the removal of IAS of flora in the islands of São Jorge, Pico and Faial, within the project intervention areas, as specified in the table below (please notice that Pic-La-3 and Jor-La-1 were not considered to achieve the aforementioned figure, as these intervention areas are the same as Pic-Av-4 and Jor-Av-4, respectively).

Table 1 - Area intervened for invasive alien species control and eradication

<b>C4.1 – Control and Eradication of IAS of Flora</b>				
<b>Intervention Area</b>	<b>Intervention Area (m<sup>2</sup>)</b>	<b>Intervened Area (m<sup>2</sup>)</b>	<b>Intervened % of Intervention Area</b>	<b>IAS Species*</b>
<b>Fai-Av-1</b>	7 488,00	<b>6 185,00</b>	<b>82,60</b>	<i>Cf, Hg, Pu</i>
<b>Fai-Av-2</b>	54 500,00	<b>54 500,00</b>	<b>100,00</b>	<i>Ad,Ce, li, Tt</i>
<b>Fai-Av-3</b>	19 400,00	<b>19 400,00</b>	<b>100,00</b>	<i>Cf, Pv, Ta</i>
<b>Fai-Av-4</b>	14 500,00	<b>13 200,00</b>	<b>91,03</b>	<i>Pv, So, Ss, Ta</i>
<b>Pic-Av-1</b>	33 800,00	<b>30 000,00</b>	<b>88,76</b>	<i>Ce, Ss, Ta</i>
<b>Pic-Av-2</b>	4 200,00	<b>4 200,00</b>	<b>100,00</b>	<i>Cf, Pa, Tt</i>
<b>Pic-Av-3</b>	23 700,00	<b>1 000,00</b>	<b>4,22</b>	<i>Df, Ce, Pv</i>
<b>Pic-Av-4</b>	19 600,00	<b>15 100,00</b>	<b>77,04</b>	<i>Cf, Of, Pa</i>
<b>Pic-Av-5</b>	23 300,00	<b>23 300,00</b>	<b>100,00</b>	<i>Cf, Ta, Tt</i>
<b>Pic-Av-6</b>	58 600,00	<b>39 000,00</b>	<b>66,55</b>	<i>Cf, Df, Ss, Ta, Tt</i>
<b>Pic-Av-7</b>	101 200,00	<b>101 200,00</b>	<b>100,00</b>	<i>Cf, Me, Ta</i>
<b>Jor-Av-1</b>	500,00	<b>500,00</b>	<b>100,00</b>	<i>Cf, Ce</i>
<b>Jor-Av-2</b>	76 300,00	<b>56 000,00</b>	<b>73,39</b>	<i>Aa, Ad, Cf, Hg</i>
<b>Jor-Av-3</b>	115 500,00	<b>115 500,00</b>	<b>100,00</b>	<i>Aa, Ad, Cf, Hg</i>
<b>Jor-Av-4</b>	11 800,00	<b>11 800,00</b>	<b>100,00</b>	<i>Ad, Cf, Hg, Tt</i>
<b>Jor-Av-5</b>	34 400,00	<b>34 400,00</b>	<b>100,00</b>	<i>Ad, Cf, li, Pa, Pv</i>
<b>Total Av</b>	598 788,00	525 285,00	87,72	
<b>Pic-La-1</b>	40 100,00	<b>35 200,00</b>	<b>87,78</b>	<i>Ce, Tt, Cf</i>
<b>Pic-la-2</b>	67 000,00	<b>67 000,00</b>	<b>100,00</b>	<i>Cf, Df, Pu, Ta, Tt</i>
<b>Pic-La-3</b>	19 600,00	<b>15 100,00</b>	<b>77,04</b>	<i>Cf, Of, Pa</i>
<b>Jor-La-1</b>	11 800,00	<b>11 800,00</b>	<b>100,00</b>	<i>Ad, Cf, Hf, Tt</i>
<b>Total La</b>	138 500,00	129 100,00	93,21	
<b>TOTAL</b>	705 888,00	627 485,00	88,89	<b>TOTAL</b>
*List of IAS: <i>Aloe arborescens</i> (Aa), <i>Arundo donax</i> (Ad), <i>Carpobrotus edulis</i> (CE), <i>Cyrtomium falcatum</i> (CF), <i>Drosanthemum floribundum</i> (DF), <i>Hedychium gardnerianum</i> (HG), <i>Ipomoea indica</i> (li), <i>Metrosideros excelsa</i> (Me), <i>Osteospermum fruticosum</i> (Of), <i>Paspalum vaginatum</i> (Pp), <i>Phytolacca americana</i> (Pa), <i>Pittosporum undulatum</i> (Pu), <i>Salpichroa origanifolia</i> (So), <i>Stenotaphrum secundatum</i> (Ss), <i>Tamarix africana</i> (Ta), <i>Tetragonia tetragonioides</i> (Tt)				

The methods applied to achieve the desired results while controlling IAS of flora consisted mostly in manual extraction of the whole plant, including roots, whenever possible. Manual control methods, as expected and previously tested, have showed good results and were the preferred method during LIFE VIDALIA field works.

In some areas, such as Monte da Guia (Figure 1) and Morro de Castelo Branco intervention areas, in Faial, heavy machinery has been used to clean large areas from all invasive species. Although this method is highly effective in removing large amounts of IAS, it is extremely important to

have enough plants available in nursery to immediately occupy the newly exposed soil and guarantee that undesired species do not colonize it.



Figure 1 - Heavy Machinery works in Monte da Guia Intervention Area

Regarding Invasive Alien Fauna, LIFE VIDALIA has dealt mostly with rodents, namely rats, mice and rabbits, that have been identified a threat to both target species, mainly when the plants are young.

In order to keep the rodents and other animals, such as cattle, away from target plants, fences were installed in some intervention areas. Besides, individual protections were installed along with the plantations (Figure 2), which resulted in keeping eventual predators away, while also shielding young plants and seedlings from strong winds and saltwater. The individual protections, albeit very useful, have to be timely removed, because they promote very fast vertical growth on some plants, which then makes them weak and very prone to breaking and collapsing with their own weight when the protections are removed.



Figure 2 - Rows of individual protections on recently planted plants

In order to deal with mice and rats in an effective but humane manner, LIFE VIDALIA installed two different active trapping systems, which allowed two different approaches and also to assess the effectiveness of each method. The traps acquired and installed by LIFE VIDALIA are “trash-bin” mouse traps from “Piper” and auto reset snap traps from “Goodnature”. As the project progressed, it became clear that the auto reset snap traps were showing better effectiveness than their “trash-bin” counterparts. In every intervention area that both kinds of traps were installed, the number of captures registered per trap were much higher on Goodnature ones. In order to exemplify the different effectiveness of each of these types of trap, the case of Monte da Guia Intervention Area will be used: in this intervention area, the 14 installed snap traps have registered 278 captures since the beginning of the year 2022, an average of 20 captures per trap. In the same period, the “trash-bin” trap that is installed in the same area, registered zero captures. Similar results have been attained in all intervention areas where both kinds of traps are present.

In all, the methods applied have made it possible to reduce the rodent population in 75% in LIFE VIDALIA’s intervention areas.

Despite all the work carried out by the LIFE VIDALIA team and the advances, it is clear that control and eradication of invasive alien fauna and flora is a long-term job. The intervened areas need to be maintained through the control of IAS of both fauna and flora to prevent the reinvasion. Specifically concerning mice and rats, installed snap traps must be maintained, which, despite having relatively costly consumables, seem to be efficient and, being non-toxic, do not represent a threat to other wildlife or the surrounding ecosystems.