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Third annual reporting on ingress of seabirds at RIAS (action C6)

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Third annual reporting on ingress of seabirds at RIAS (action C6)

Project LIFE Ilhas Barreira

RIAS/ALDEIA – Centro de Recuperação e Investigação de Animais Selvagens

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Summary / Resumo

This report describes the results obtained at RIAS in 2022 regarding the reception and treatment of injured or weakened seabirds from the Algarve region.
Between January 1st and December 31th 2022, 1543 seabirds (930 live and 613 dead) were admitted at RIAS hospital from Algarve region.
The most common seabird species admitted at RIAS hospital were gulls. Yellow-Legged Gull was the most common species (50%), followed by Lesser black-backed Gull (22%) and Audouin's Gull (21%).
The main causes of admittance of seabirds at RIAS hospital was "Paretic Syndrome" with 52% of the animals, weakness with 23% of the individuals and trauma of unknown origin with 12%.
During 2022 it was possible to release back to nature 542 seabirds, which represents a 58% release rate. From Deserta Island it was possible to release 26 birds (68% release rate).

Este relatório descreve os resultados obtidos no RIAS em 2022 relativamente à receção e tratamento de aves marinhas feridas ou debilitadas, provenientes da região do Algarve.
De 1 de janeiro a 31 de dezembro de 2022 foram recebidas no RIAS 1543 aves marinhas (930 vivas e 613 mortas).
As espécies mais comuns foram gaivota-de-patas-amarelas (50%), gaivota-d'asa-escura (22%) e gaivota-de-Audouin (21%).
As principais causas de ingresso de aves marinhas no RIAS em 2022 foram "Síndrome Parético" com 52% dos casos, debilidade em 23% dos casos e trauma de origem desconhecida em 12%.
Ao longo de 2022 foi possível devolver à natureza 542 aves marinhas recuperadas o que representa uma taxa de libertação de 58%. Provenientes da Ilha Deserta foi possível devolver à natureza 26 aves (taxa de libertação de 68%).

1| Introduction

In 2008, the Portuguese Marine IBA (Important Bird Area) inventory (published by SPEA), identified a marine IBA at Ria Formosa. The existing baseline information proved to be insufficient, and this IBA never became legally binding. Between 2012 and 2015, Portugal made an important step towards the implementation of the Natura 2000 network in the marine environment, by establishing new marine SPAs (Special Protection Areas). Nevertheless, this process was not aimed towards the conservation of Audouin's Gull (*L. audouinii*). At the time, the breeding information and distribution data for this species in Portugal was considered insufficient. Since then, further work has been developed and new insights indicate that, nowadays, there is a stable meta-population breeding in the uninhabited Barreta/Deserta Island. Climate change and derived sea-level rise are global scale problems threatening most of the coastal habitats, among which the barrier islands are not an exception and, as holders of unique ecosystems, they need urgent attention. These islands are also threatened by human pressure and it is urgent to implement measures that can reduce these threats. LIFE Ilhas Barreira aims to characterize the local ecological requirements and conservation threats of the target species and habitats in Ria Formosa, and particularly at Barreta Island, to implement effective conservation actions. This project represents an important step towards the present and future sustainable management of the SPA at Ria Formosa.

1.1 Project objectives

The main objectives of the project are:

1. Understand the main threats to the target species (Audouin's Gull and Little Tern *S. albifrons*) and habitats, both on land and at sea;
2. Recover the Grey Dunes habitat and assess the effect of gulls on this habitat;
3. Promote the sustainable use of the Ria Formosa barrier islands and marine area, focusing on fisheries and tourism;
4. Evaluate the effect of climate change and other drivers of change on the eco-morphology of the barrier islands system;
5. Understand the breeding ecology, foraging behaviour and spatial distribution of Audouin's Gull and Little Tern;
6. Evaluate and mitigate bycatch impacts on seabirds and assess the future effect of the discard ban policy on Audouin's Gull local population, engaging the local fisherman community;
7. Evaluate possible competitive interactions and predation from Yellow-legged Gull (*L. michahellis*) towards the target species;
8. Protect breeding areas for Audouin's Gull and Little Tern (restricting tourist access, controlling predators, increasing surveillance and implementing environmental awareness campaigns);
9. Review the marine IBA limits and update the marine area of the SPA.

1.2 Contextualization of RIAS in the project

RIAS - Wildlife Rehabilitation and Investigation Center is the only wildlife hospital in Algarve and it is located in Ria Formosa Natural Park, Olhão. Near 1500 seabirds are admitted every year in RIAS. As expected, the higher numbers derive from most common species, e.g. Yellow-legged Gulls, Lesser Black-backed Gulls, Northern Gannets and Black-headed Gulls. Since 2009, RIAS has received more seabird species of conservation concern, namely Audouin's Gulls, Balearic Shearwaters and Little Terns. However, rehabilitation success was extremely low for these 3 species, 27%, 0% and 0%, respectively. The particular requirements of these 3 species (ecology and handling) together with the lack of specialized enclosures, and the critical body condition of the birds were the main factors for such low success rate. All injured seabirds found during the fieldwork activities performed under other actions during the project (e.g. A4, A5, C1, C3, C5, etc) will be brought to RIAS by the project team.

Admittances in RIAS are expected to significantly increase along the life time of the project due to the intensive fieldwork occuring in the area. Improving the center responsiveness through an upgrade of rehabilitation facilities and increase training of RIAS staff is the first step. The main aim of this action is to specialize RIAS in the recovery of seabirds by improving technical skills and rehabilitation facilities adapted to the reception, treatment and recovery of this group of birds. A dedicated rehabilitation area for seabirds will be set in RIAS. A properly equipped pool allows seabirds a better and faster recovery. Seabird adapted fence will limit this area. Finally, an upgrade on the necropsies lab is foreseen. Better knowledge on mortality causes is urgent. This improvement will enable RIAS to preserve higher numbers of dead carcases during busier seasons to be analysed later during calm periods.

Since the project will focus on seabird species that have a concerned conservation status, successful rehabilitation will have a significant positive impact at the population level. During the first year of the project, new equipment will be acquired and RIAS facilities will be upgraded. In the second year, a seabird recovery course will be organized for the project team. By the end of the project, we expect to increase by 20% the success rate of seabirds rehabilitation in RIAS hospital.

2 | Objectives of Action C6

The main purpose of this action is to specialize RIAS hospital in the rehabilitation of seabirds by improving technical skills and facilities adapted to the reception, treatment and rehabilitation of this group of birds.

Since the project will focus on bird species that have a high conservation status, rehabilitation and releasing them back to nature will have a positive impact on the populations of birds.

During the first year of the project, the structures for the recovery of seabirds and the acquisition of new equipment for the clinic will be improved.

In the second year of the project a practical workshop on seabird recovery will be organized for project technicians and partners.

The recovery of seabirds will take place throughout the project.

3| Improve seabirds' facilities

In 2022 the new container house installed during 2020 to improve the necropsy lab (Fig. 1) was daily used.

Figure 1 | Necropsy Lab in the container house.

The new intensive care room for birds in critical condition (Fig. 2) created during 2020 was daily used and that allowed us to improve our response capacity for the recovery of the project's target species.

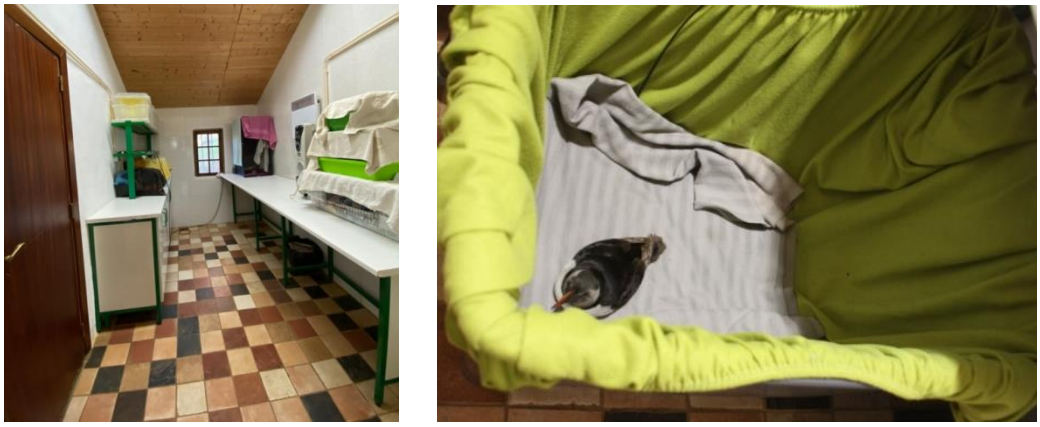

Figure 2 | New intensive care room for birds in critical condition and more sensitive species. Plastic box adapted to seabirds, atlantic puffin while recovering.

During 2022 the exterior facilities for seabirds recovery was also daily used. (Fig. 3)

Figure 3 | Pool, filter and water tanks for seabirds recovery.

4| Seabirds admittances at RIAS

Between January 1st and December 31th 2022 RIAS received a total of 3051 animals (2161 live and 890 dead). Of these, 1543 were seabirds from all over the Algarve and, more specifically, 106 seabirds were from Deserta Island.

In this report we will give an overall analysis of seabird admittancesat RIAS hospital during 2022, always giving special emphasis to birds coming from Deserta Island.

4.1 Species

During 2022 the most common seabird species admitted at RIAS hospital from Algarve region were gulls (Table 1). Yellow-Legged Gull was the most common species (50%), followed by Lesser black-backed Gull (22%) and Audouin's Gull (Fig. 4; 21%). Most of the birds from the Algarve region were admitted alive (60%).

Table 1 | Seabird species admitted at RIAS hospital from Algarve region.

	Algarve Region	
Species	**Alive admittance**	**Dead admittance**
Alca torda	2	13
Chlidonias niger	1	0
Chroicocephalus ridibundus	15	4
Fratercula artica	1	1
Ichthyaetus audouinii	25	302
Ichthyaetus melanocephalus	5	1
Larus fuscus	266	77
Larus marinus	1	0
Larus michahellis	592	174
Morus bassanus	12	20
Oceanodroma leucorhoa	1	0
Phalacrocorax carbo	5	2
Phalaropus fulicarius	1	0
Puffinus gravis	1	17
Puffinus mauretanicus	0	1
Rissa tridactyla	1	1
Sterna hirundo	1	
TOTAL	**930**	**613**

Figure 4 | Audouin's Gulls in recovery.

From Deserta Island, the most common seabird species were also gulls (Table 2): 77% Yellow-Legged Gull, 16% Lesser black-backed Gull and 6% Audouin's Gull. Northen Gannet and Little Tern were also admitted in smaller numbers (1% both).

Most of the birds from Deserta Island were admitted alive (76%) at RIAS hospital.

Table 2 | Seabird species admitted at RIAS hospital from Deserta Island.

	Deserta Island	
Species	**Alive admittance**	**Dead admittance**
Alca torda		2
Calidris alba	3	
Ichthyaetusaudouinii	7	32
Larus fuscus	7	2
Larus michahellis	21	10
Morusbassanus		4
Puffinus gravis		17
Puffinus mauretanicus		1

Most seabirds admitted at RIAS during the winter are migratory species or wintering in the region. Thus, it is normal, in the months of September to February, to increase the inflow of seabirds.

Analyzing the monthly distribution of admittances, this year the occurrence of paretic syndrome was not traditional (with peaks in the fall and spring). In 2022, the paretic syndrome appeared throughout the year in a uniform way, being more relevant in January and December.

The maximum observed in July refer to the admittance of dead Audouin's Gulls. This mortality, similar to last year, was caused by kidney failure, being the main hypothesis dehydration due to lack of food. During the upcoming year, a master's thesis will be developed for a better understading ofthis problem.

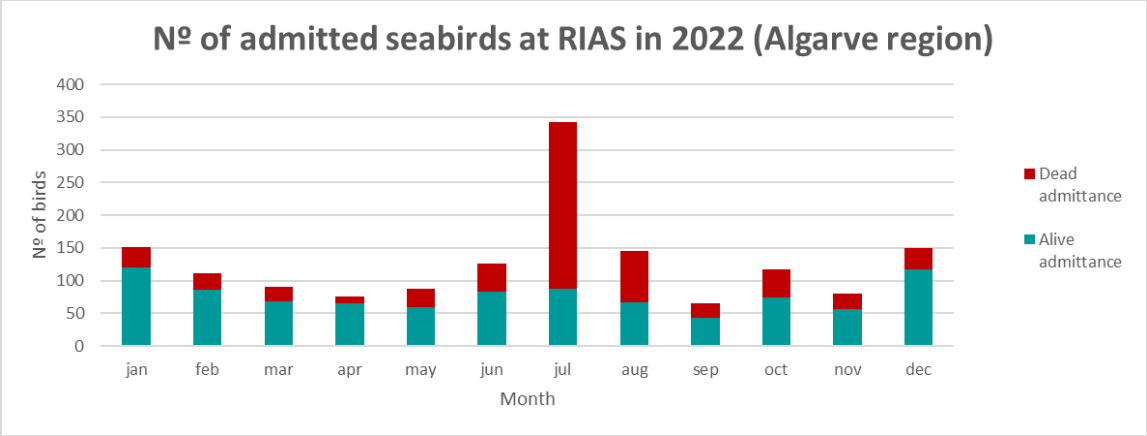

Chart 1 | Monthly distribution of admittances of seabirds at RIAS in 2022 (Algarve region).

Analyzing the deliveries from Deserta Island (Chart 2), there is a maximum in the months of June/July and October.

The peaks in June and July refer to the admittance of dead Audouin's Gull collected by the project teams.

The October peak is due to a case of capture of 17 Great Shearwater in fishing nets.

It should be noted that the effort of collecting birds on the Deserta Island varies according to the presence of the project technicians, and is not constant throughout the year.

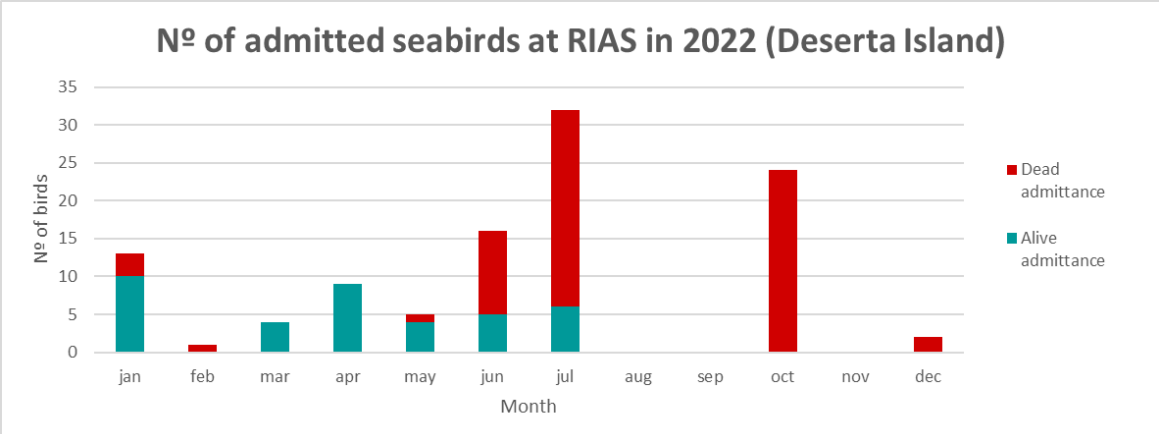

Chart 2 | Monthly distribution of admittances of seabirds at RIAS in 2022 (Deserta Island).

4.2 Admittance causes

In 2022 the main cause of admittance of seabirds at RIAS hospital was "Paretic Syndrome" with 50% of the animals presenting this patoloy (Table 3). The "Paretic Syndrome" symptoms are highly compatible with food poisoning caused by ingestion of biotoxins. The second most relevant cause of admittance in 2022 was weakness/malnutrition situations with 23% of the individuals and trauma of unknown origin and with 12%. The 3 most common causes of admittance were found to represent 87% of all arrivals.

Table 3 | Causes of admittance of seabirds at RIAS in 2022 (Algarve region).

	Algarve Region
Admittance cause	**Number of admittances**
Run over by car	15
Ilegal Captivity	2
Weakness/ malnutrition	359
Unknown	67
Illness	7
Predation	1
Oiled	1
Orphan	43
Fishingnet / Hook	56
Paretic syndrome	805
Gun shot	6
Trauma	181

Regarding admittances from Deserta Island, in 2022 the main cause of admittance of seabirds at RIAS hospital was “Unknown” with 38% of the animals (Table 4). The carcasses classified as unknown were in an advanced state of decomposition, being impossible to determine the cause of dead. The second most relevant cause of admittance with 29% of the individuals was "Paretic Syndrome".

Table 4 | Causes of admittance of seabirds at RIAS in 2022 (Deserta Island).

	Deserta Island
Admittance cause	**Number of admittances**
Weakness / malnutrition	10
Unknown	40
Fishing net / Hook	25
Paretic syndrome	31

4.3 Destination

Between January 1st and December 31th of 2022, 1543 seabirds (930 live and 613 dead) were admitted at RIAS hospital from Algarve region (Chart 3). Of the 930 seabirds admitted alive, 152 were euthanized, 101 died within 48h, 49 died within 48h but less than one month, and 1 died after the first month of hospitalization. 85 birds were still in recovery at the end of 2022 and carried over to 2023. During 2022 it was possible to release 542 seabirds to nature (Fig. 6), which represents a 58,3% release rate.

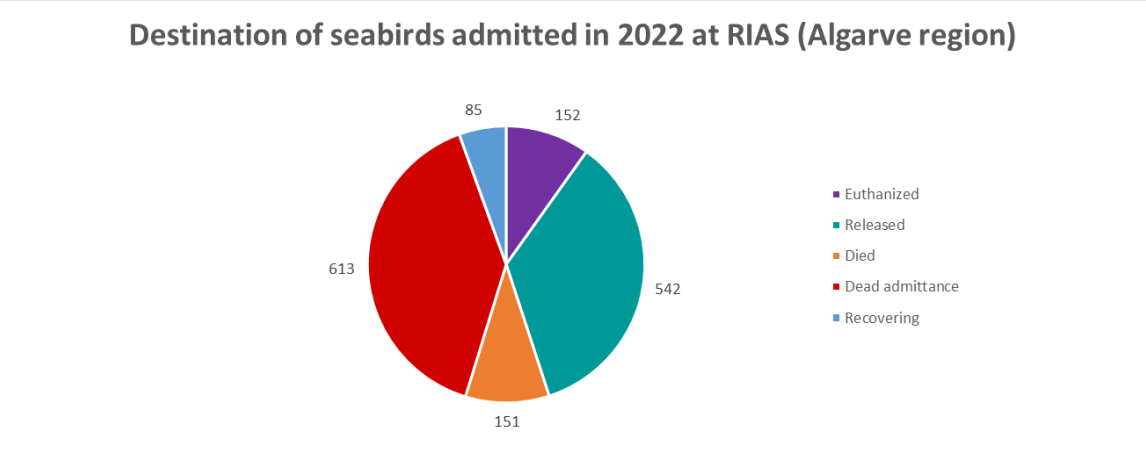

Chart 3 | Destination of seabirds admitted in 2022 at RIAS (Algarve region).

Figure 6 | Release back to Nature of a Great Shearwater.

From Deserta Island, 106 seabirds (38 live and 68 dead) were admitted at RIAS hospital during 2022 (Chart 4). Of the 38 seabirds admitted alive, 1 was euthanized, 9 died within 48h and 2 died within 48h but less than one month of hospitalization. During 2022, from Deserta Island, it was possible to release 26 seabirds to nature, which represents a 68% release rate (2020: release rate was 50%; 2021: release rate was 75%).

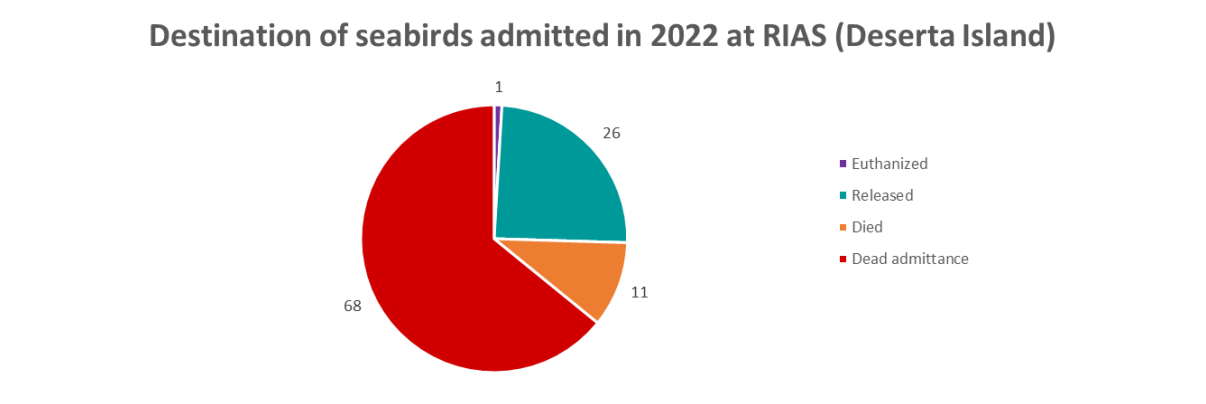

Chart 4 | Destination of seabirds admitted in 2021 at RIAS (Deserta Island).

Knowing that seabirds - apart from gulls - are extremely sensitive when kept in captivity (usually presenting capture myopathy) it becomes important to analyze how long these birds are kept alive in recovery. In 2022, 50% of the Northen Gannets received alive, died within 48h of hospitalization and 50% were euthanized. It wasn´t possible to release any Northern Gannet during 2022.
Since some birds presented severe neurological symptoms, euthanasia was performed because of suspected avian influenza. Other euthanasias were performed according to the recovery protocol for emaciated seabirds developed during the project, where critical points were established. Since some birds did not meet the minimum requirements for attempted recovery like serum Total Proteins, they were euthanasied. From the necropsies performed on the animals that died during hospitalization, the findings were compatible with capture myopathy.

Durind 2022 all admitted seabirds, except gulls, gannets and cormorants, died during the first few days of hospitalization, only with one exception, a Great Shearwater was released.

If we analyze the release rates within the order Charadriiformes (Chart 5), we find that the species with the most successful recovery in 2022 was Lesser black-backed Gull (164 birds released) followed by Yellow-Legged Gull (359 birds released), Black-headed Gull (9 birds released) and Mediterranean Gull (2 bird released). The least successful was Audouin's Gull (5 birds released). It wasn´t possible to recover the only one Great Black-backed Gull received, nor the Black-legged Kittiwake received.

In 2022 we highlight the result obtained with Audouin's Gull, whose release success increased from 6% to 20%.

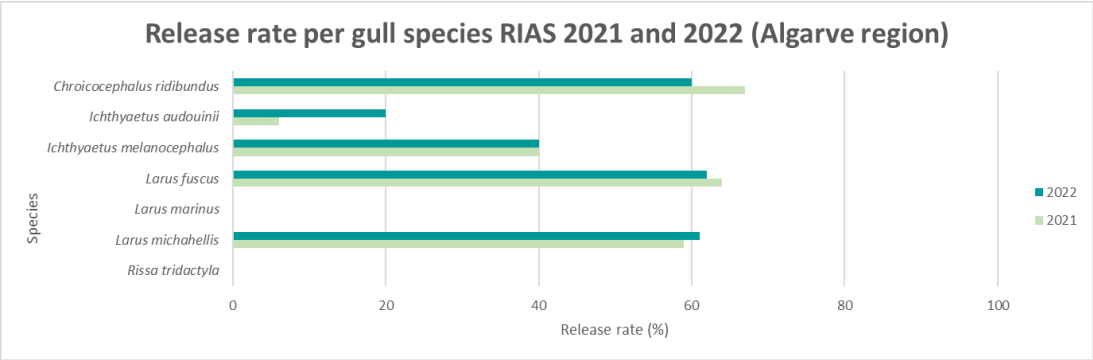

Chart 5 | Release rates within the order Charadriiformes in 2021 and 2022 (Algarve region).

4.4 Entities envolved

Regarding the entities that delivered seabirds to RIAS during 2022 (Table 5), it was found that 63% of the seabirds collected in the Algarve were delivered by ICNF Park Rangers and 17% by citizens.

Table 5 | Entities that delivered seabirds to RIAS during 2022 (Algarve region).

Number of birds delivered per entity (2022) – Algarve region											
Species	Animaris	Fire Department	Councils	Águas do Algarve	ICNF	Citizens	RIAS	SEPNA - GNR	SPEA	CCMAR UAlg	Univ. Coimbra
Alca torda					5	6		2	2		
Chlidonias niger						1					
Chroicocephalus ridibundus				1	10	7	1				
Fratercula arctica					2						
Ichthyaetus audouinii			1	27	127	9	123	1	38		1
Ichthyaetus melanocephalus					4	1	1				
Larus fuscus		2	3		214	105	7	5	5	2	
Larus marinus					1						
Larus michahellis	1	6		2	576	134	17	7	17		6
Morus bassanus					25	1		2	4		
Oceanodroma leucorhoa						1					
Phalacrocorax carbo					7						
Phalaropus fulicarius						1					
Puffinus gravis					1					17	
Puffinus mauretanicus									1		
Rissa tridactyla					2						
Sterna hirundo						1					

Regarding the seabirds collected in Deserta Island during 2022 (Table 6), 57% were delivered at RIAS by SPEA staffand 24% by CCMAR team.

Table 6 | Entities that delivered seabirds to RIAS during 2022 (Deserta Island).

Number of birds delivered per entity (2020) – Deserta Island						
Species	**Animaris**	**CCMAR UAlg**	**ICNF**	**RIAS**	**SPEA**	**Univ. Coimbra**
Alca torda					2	
Ichthyaetus audouinii						3
Larus fuscus					38	1
Larus michahellis		2		3	4	
Morus bassanus	1	2	2	5	15	6
Puffinus gravis		3			1	
Puffinus mauretanicus		17				

4.5 Geographical origin

In 2022, most of the seabirds received in RIAS came from 4 municipalities in the Algarve region (Table 7): Faro (30%), Portimão (20%), Loulé (11%), Albufeira and Lagos (10% each).

Birds collected at Deserta Island (Faro) represent 7% of the annual total received at RIAS in 2022.

Table 7 | Geographical origin of the seabirds received at RIAS in 2022.

Municipalities	Nº of seabirds
Albufeira	152
Aljezur	7
Castro Marim	2
Faro	465
Lagoa	117
Lagos	148
Loulé	1
Olhão	174
Portimão	90
Silves	1
Tavira	302
Vila do Bispo	32
Vila Real de Santo António	11

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