



Ecological restoration of Praia Islet

Graciosa Island Biosphere Reserve

Biodiversity management, resilience, and ecosystem restoration

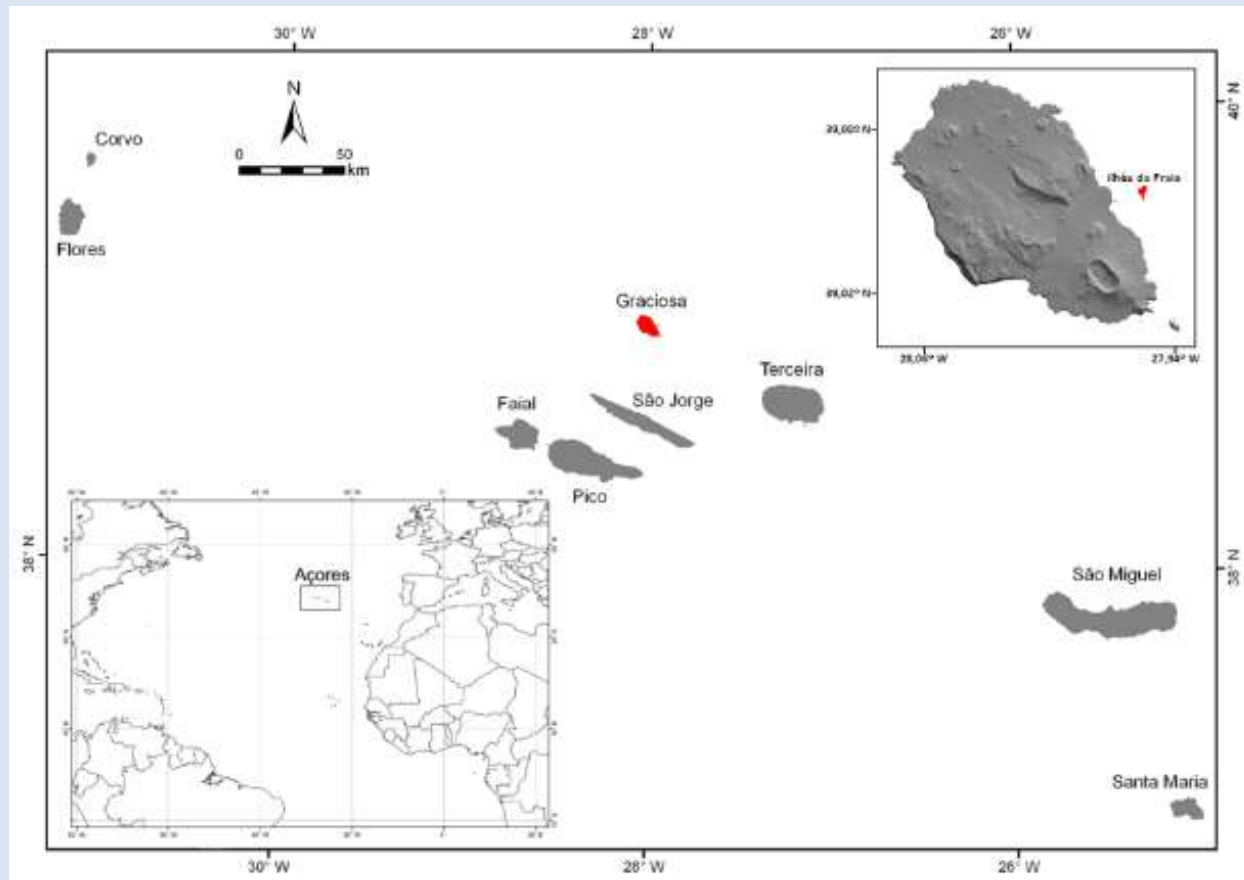
Graciosa Island Biosphere Reserve

Country: **Portugal**, Autonomous Region of the **Azores**

Year of designation: **2007** Year of the first periodic review: **2017**

Total area of the island: **60,88 km²** Highest point: **405 m** Coastline: **43,9 km**

Number of small islets: **17** Population density: **72,39 hab / km²**



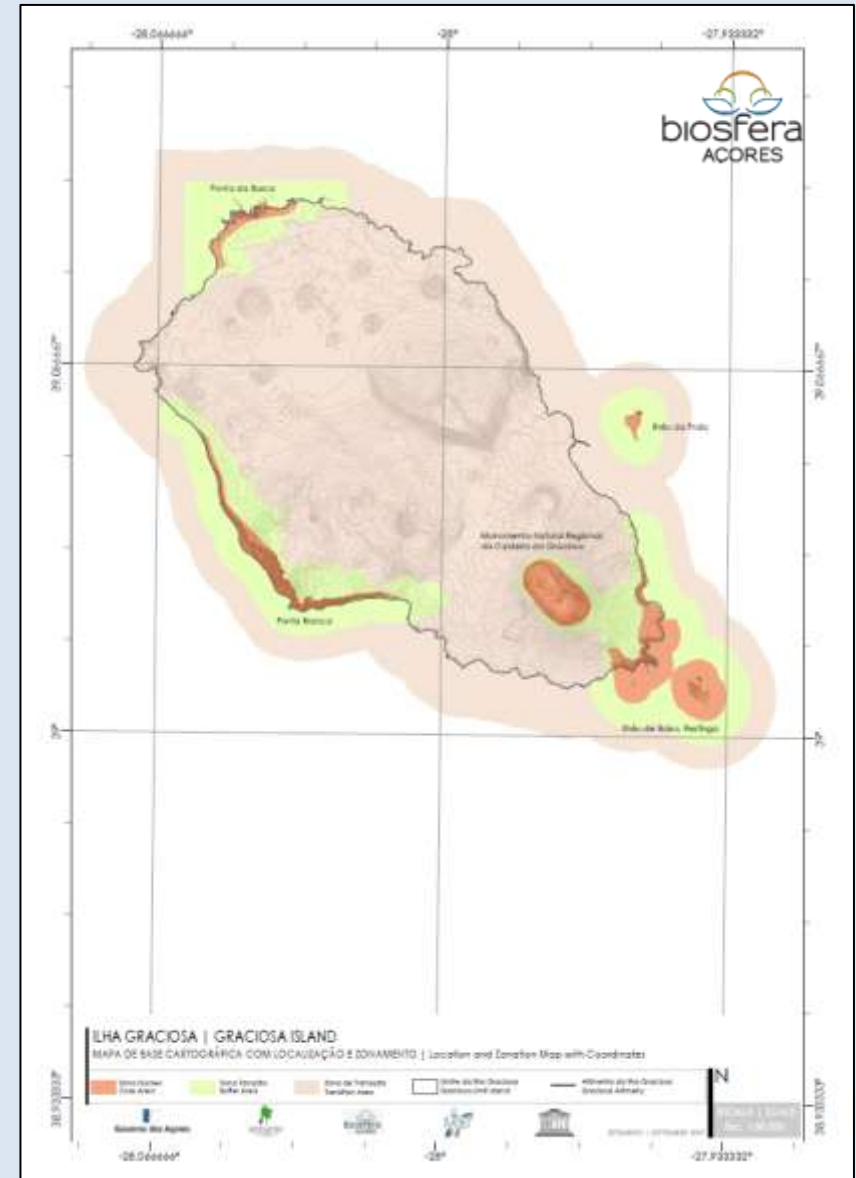
Graciosa Island Biosphere Reserve

Biosphere Reserve: 107,85 km²
(60,88 km² terrestrial / 46,97 km² marine)

Core Area: 5,57 km²

Buffer Area: 19,19 km²

Transition Area: 83,09 km²



Graciosa Island Biosphere Reserve

Geoparque Açores (Geosites): 7,87 km²

Graciosa Nature Park (Protected Areas): 11,1 km²

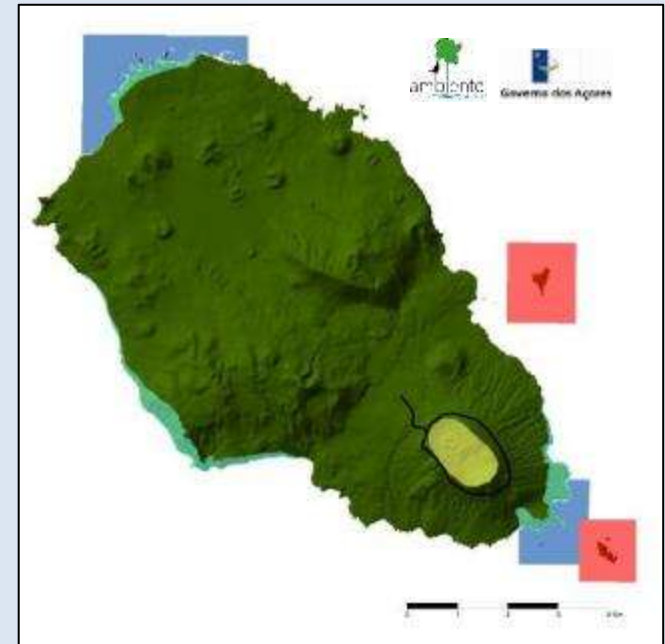
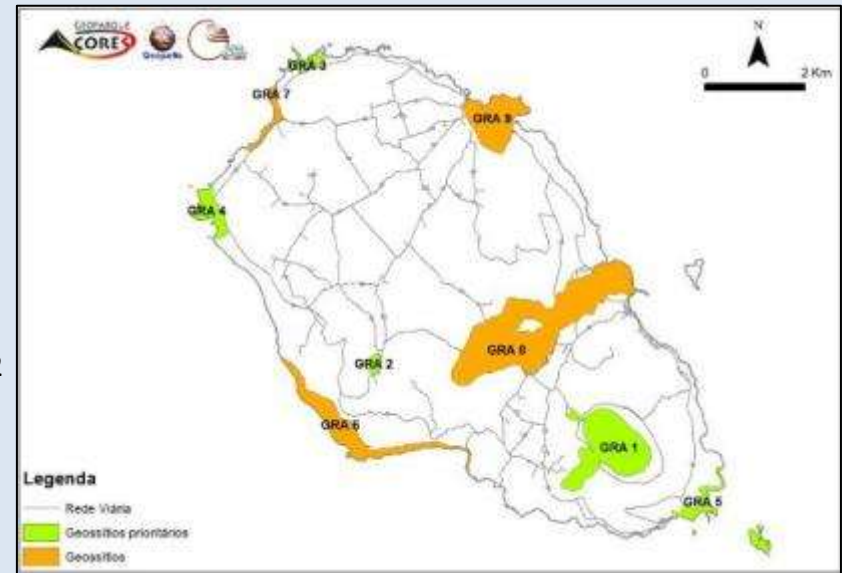
(3,53 km² terrestrial / 7,57 km² marine)

European Union's Natura 2000 network: 7,24 km²

RAMSAR sites: 1,19 km²

Important Bird Areas: 279 km²

(2 km² terrestrial / 277 km² marine)



Brief introduction on the RB (basic data)

Graciosa Island Biosphere Reserve



Historical background

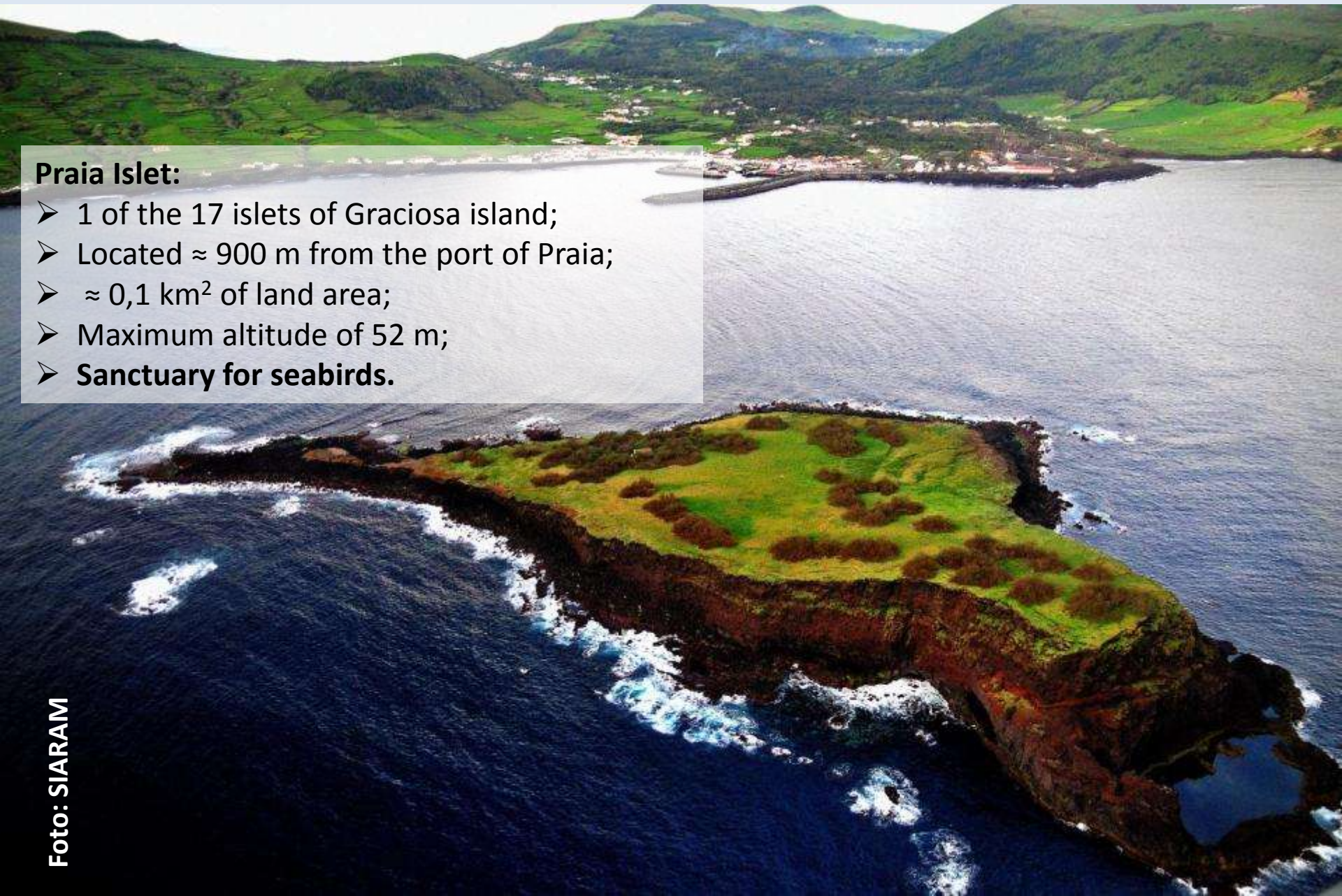
- In **1519**, the Praia Islet (along with the Baixo Islet) was donated by King D. Manuel I to Mundos Furtado de Mendonça, to be used as a **pasture zone for goats**;
- In **1991** the **Special Protection Zone** (Natura 2000) of the Praia Islet is created;
- In **1995** begins **ecological restoration** of the Praia Islet.



Characterization of Praia Islet, Azores Archipelago

Praia Islet:

- 1 of the 17 islets of Graciosa island;
- Located ≈ 900 m from the port of Praia;
- $\approx 0,1$ km² of land area;
- Maximum altitude of 52 m;
- **Sanctuary for seabirds.**



Praia Islet is home for six species of seabirds

Monteiro's storm-petrel
(*Hydrobates monteiroi*)



Madeiran storm-petrel
(*Hydrobates castro*)



Cory's shearwater
(*Calonectris borealis*)



Puffinus shearwaters
(*Puffinus lherminieri baroli*)



Common tern
(*Sterna hirundo*)



Roseate tern
(*Sterna dougallii*)



Graciosa island is the only known breeding site for and endemic seabird!

Monteiro's storm-petrel

Hydrobates monteiroi

The species was first described in 2008 and named after the late Dr. Luís Monteiro who contributed supremely to our knowledge of Azorean seabirds.

The nesting colonies of this species are located in small uninhabited islets, located off the Graciosa island, namely in the Praia, Baixo and Baleia islets.

The Monteiro's storm-petrel is the smallest and the only endemic marine bird of the Azores.



Socioeconomic, cultural and landscape background

- In addition to its Biodiversity value, the islet is also an ideal **place to catch limpets, barnacles and underwater fishing**, with an economic impact on the island (illegal trade), which has been heavily conditioned (barnacles) or banned (limpets, since 1993) in protected areas, particularly at Praia Islet.



- Licensed **maritime-tourist activities** and recently **birdwatching**.

Presentation of the project or experience in relation to the selected topic
Socioeconomic, cultural and landscape background

- **Used in the recent past, as a summer resort** (family and friends, especially on May 1st, a celebration deeply rooted in Graciosa, with the realization of picnics, barbecues, musical activities). **At this time no terns were breeding in the islet**, too much disturbance.
- It was common in the summer for local people to spend the night in the house of islet.



Presentation of the project or experience in relation to the selected topic
Socioeconomic, cultural and landscape background

- The Praia islet has also great importance in the landscape panorama of Graciosa island.



Ecological restoration of Praia Islet, Azores Archipelago

- In the **90's**, the Special Protection Zone (Natura 2000) of the Praia islet was created and a nature warden **was hired**.
- His main function was the protection of the islet seabirds from human activity, namely:
 - ✓ Prevent capture of seabirds;
 - ✓ Prevent destruction of nests and eggs;
 - ✓ Prevent disturbance of the birds;
 - ✓ Etc.
- **2008** – Creation of Graciosa Natural Park -> **access to the islet becomes CONDITIONED**



Ecological restoration of Praia Islet, Azores Archipelago

- In **1995**, the situation of the islet was critical! Due to introduced rabbits it was almost devoid of vegetation and soil erosion was high.



Before



After

Ecological restoration of Praia Islet, Azores Archipelago

- The ecological restoration of the islet was conducted in several phases :



- ✓ **Eradication of rabbits** (*Oryctolagus cuniculus*) the only mammal on the islet. 82 rabbits were killed (poison and shotgun).
- ✓ **Control of soil erosion** (placement of physical barriers in water lines).

Ecological restoration of Praia Islet, Azores Archipelago

- ✓ **Restoration of flora**, with elimination of invasive plants such as hottentot-fig (*Carpobrotus edulis*) and wild sage (*Lantana camara*).
- ✓ **Planting and seeding of several native plants** obtained from the adjacent Baixo Islet and Graciosa island:

- *Azorina vidalii*^{E*}
- *Erica azorica*^E
- *Festuca petraea*^E
- *Morella faya*
- *Myosotis maritima*^{EP}
- *Hypericum foliosum*^E
- *Carex hochstetteriana*^E
- *Tolpis succulenta*^E
- *Spergularia azorica*^E

E - endemic taxon; P - priority taxon ; * - priority European species



Foto: Luís Aguiar



Foto: Luís Aguiar

Presentation of the project or experience in relation to the selected topic
Ecological restoration of Praia Islet, Azores Archipelago

Azorina vidalii



Spergularia azorica



Carex hochstetteriana



Tolpis succulenta



Erica azorica



Daucus carota subsp. *azoricus*



Ecological restoration of Praia Islet, Azores Archipelago

- ✓ **Installation of artificial nests** for terns (50 wooden nests) and storm-petrels (150 PVC nests in 2000-2001 and an additional 14 in 2016).



Ecological restoration of Praia Islet, Azores Archipelago

- A plan for the eradication of exotic and invasive vegetation was implemented.



Ecological restoration of Praia Islet, Azores Archipelago

- A walking path was set to guide educational visits.



Presentation of the project or experience in relation to the selected topic

Ecological restoration of Praia Islet, Azores Archipelago

- The “Support House of the Praia islet ” was recovered to support research activities.



Presentation of the project or experience in relation to the selected topic

Ecological restoration of Praia Islet, Azores Archipelago

- Informative panels was installed.



Timeline

- In **2000** the Praia Islet was classified as an *Important Bird Area* (IBA);
- In **2007** it was classified as a core area of the Graciosa Island Biosphere Reserve;
- In **2008**, with the creation of the Graciosa Natural Park, it was classified as a Natural Reserve;



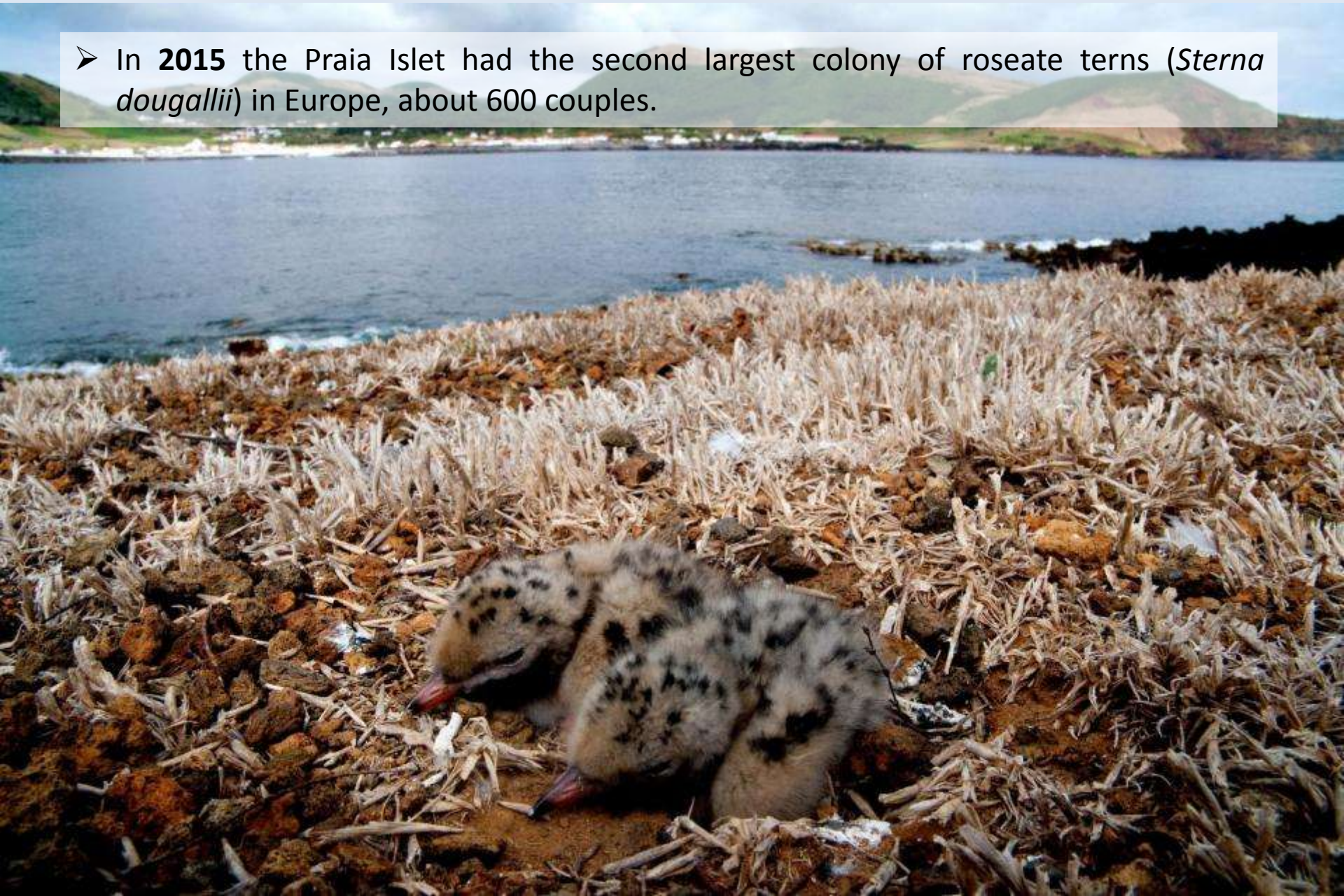
Timeline

- In **2008** a new species was recognized by science, the Monteiro's storm-petrel (*Hydrobates monteiroi*), a small seabird, that to date, only know to nest in the islets of Graciosa;



Timeline

- In **2015** the Praia Islet had the second largest colony of roseate terns (*Sterna dougallii*) in Europe, about 600 couples.



Ecological restoration of Praia Islet, Azores Archipelago

Coastal meadow with vidália (*Azorina vidalii*), the only species of the monospecific genus *Azorina* in the World. The largest field of *Azorina* in the Azores.



Ecological restoration of Praia Islet, Azores Archipelago

- Praia islet now plays a major role in environmental and biodiversity awareness campaigns.



Ecological restoration of Praia Islet, Azores Archipelago

- And now numerous research papers on the breeding seabirds have been published, particularly by the Department of Oceanography and Fisheries (DOP) of the University of the Azores and the Portuguese Society for the Study of Birds (SPEA).



Ecological restoration of Praia Islet, Azores Archipelago

➤ Restoration of Praia Islet began in 1995 and over the last two decades it has involved:

- 1) rabbit eradication;
- 2) control of soil erosion;
- 3) native plant reintroduction;
- 4) vegetation control;
- 5) installation of artificial nests.

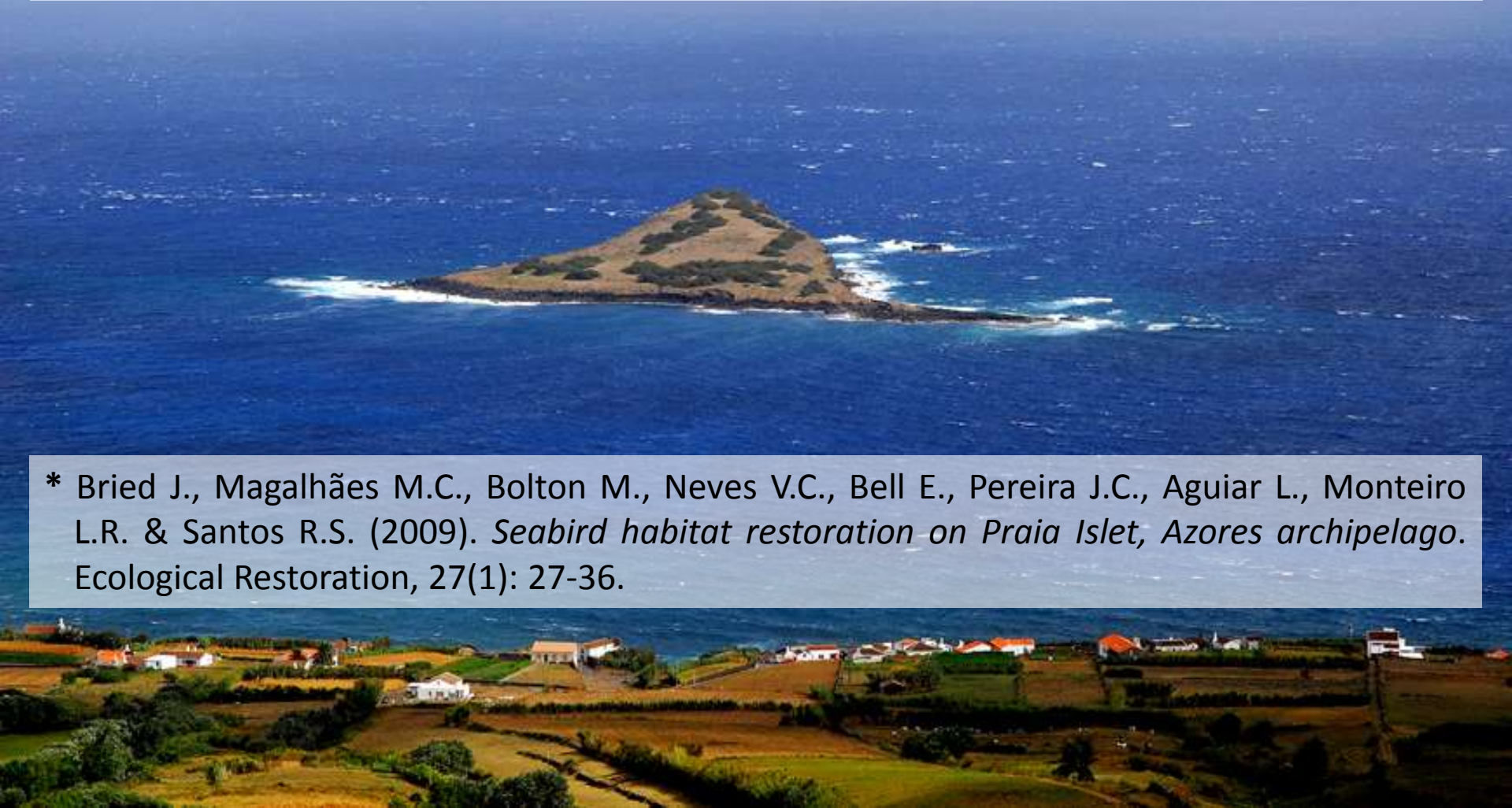
It now seems necessary to start:

- * Lizards control (*Teira dugesii*)
- * Starling control (*Sturnus vulgaris*)



Ecological restoration of Praia Islet, Azores Archipelago

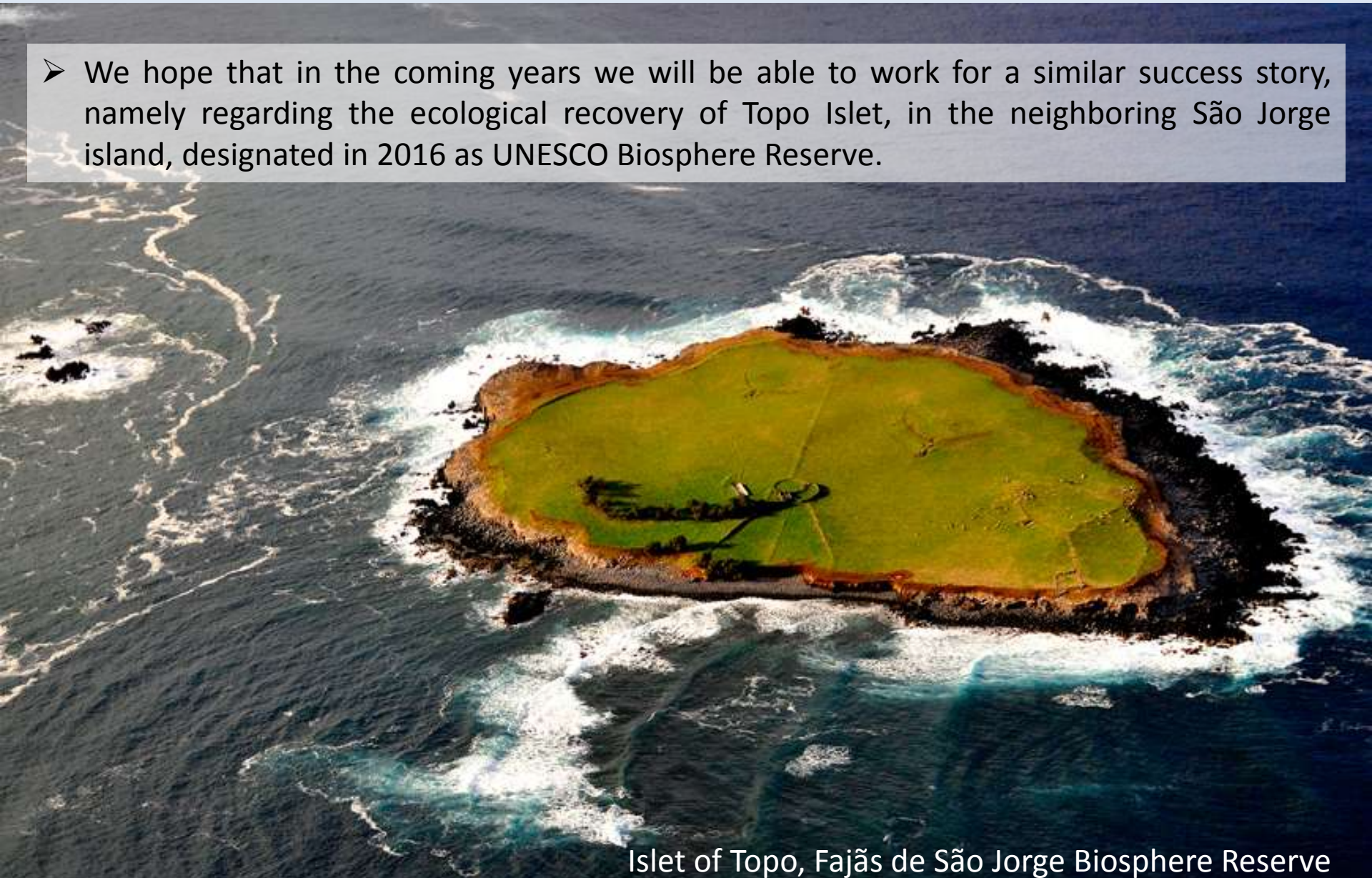
- The success of the methods used, their results, implications and lessons, already described in a published article*, support the possibility of trying to replicate the process in other similar islets, namely of the Azores archipelago.



* Bried J., Magalhães M.C., Bolton M., Neves V.C., Bell E., Pereira J.C., Aguiar L., Monteiro L.R. & Santos R.S. (2009). *Seabird habitat restoration on Praia Islet, Azores archipelago*. *Ecological Restoration*, 27(1): 27-36.

Ecological restoration of Praia Islet, Azores Archipelago

- We hope that in the coming years we will be able to work for a similar success story, namely regarding the ecological recovery of Topo Islet, in the neighboring São Jorge island, designated in 2016 as UNESCO Biosphere Reserve.



Islet of Topo, Fajãs de São Jorge Biosphere Reserve



VIII Meeting of the World Network of Island and Coastal Biosphere Reserves

MENORCA
22th-26th of May 2018

**Thank you!
Gracias!**