

# The LIFE Baie de l'Aiguillon project

Preservation, restoration and enhancement  
of the habitats of European importance  
in the Aiguillon Bay

2016 - 2022

SYNTHESIS OF 6 YEARS OF ACTIONS.





# The context

The Marais Poitevin is the largest wetland area on France's Atlantic coast. It is the result of the gradual accumulation of fine sediment in the Golfe des Pictons and today features a variety of natural habitats and great biodiversity, justifying its recognition as a coastal environment of European importance.

Classified as a National Nature Reserve, Aiguillon Bay forms the coastal facade of the Marais Poitevin region. It is a vast natural area made up of remarkable environments and home to extraordinary biodiversity.

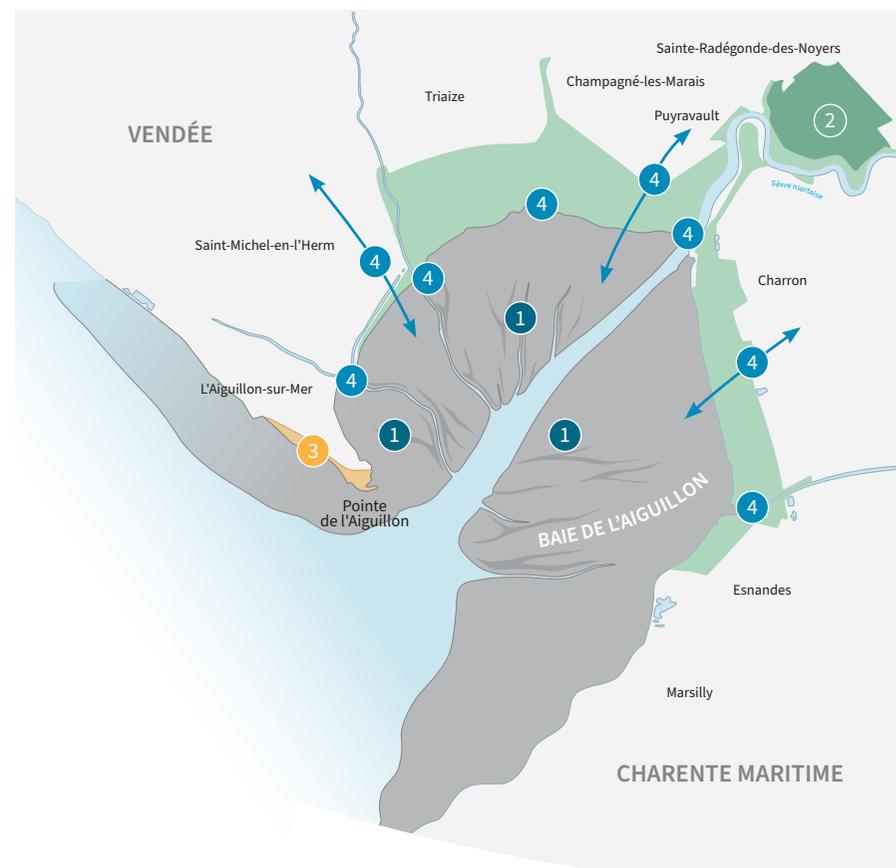
This area between land and sea, subject to the influence of tides and storms, suffers from sediment deposits and significant pressure caused by human activity: coastal development, agriculture, oyster farming and tourism.

Furthermore, the prospects of climate change are encouraging the region to adapt coastal protection measures. Coastal habitats are thus finding a new place in public policy decisions which can play a key role in the development of protection measures.

The Marais Poitevin Natural Regional Park and the managers of the Aiguillon Bay National Nature Reserve (the French Biodiversity Agency and the League for the Protection of Birds) have developed and implemented the LIFE Baie de l'Aiguillon project, which is primarily co-financed by the European Commission and the French State.

The LIFE Baie de l'Aiguillon project was launched to preserve, restore and enhance habitats of European importance in the Aiguillon Bay.

Running from January 2016 to June 2022, this project included five ambitious areas of action.



**1 The Aiguillon Bay: restoring mud flat habitats**

Implementing experimental removal work of former shellfish farming structures on mud flats (247 acres).

**2 Pré Mizottière farm: restoring and creating maritime environments**

Moving back dyke sea defences and restoring maritime environments (around 24 acres of salt marshes).

Restoring subsaline meadows (74 acres) by improving hydraulic management.

Creating a bird-watching platform for the public.

**3 Pointe de l'aiguillon: protecting and restoring dune habitats**

Restoring natural areas and protecting dune environments.

Improving how the public is received.

**4 Improving knowledge about biodiversity**

Studying the diet of Anatidae and how they travel between the bay and the Marais Poitevin.

Studying the impact of water quality on biodiversity behaviour.

**5 Raising public awareness and disseminating the results**

Raising public awareness about the roles of natural areas.

Creating public awareness tools about our rich natural heritage.

Organising seminars about global warning and shellfish farming.

Transferring knowledge and results to coastal area managers, elected officials and professionals.



Dunlins  
(*Calidris alpina*)  
© Quentin Gama

# The LIFE Baie de l'Aiguillon project

Coordinator The Marais Poitevin Natural Regional Park

Associated beneficiaries The League for the Protection of Birds  
The French Biodiversity Agency (OFB)

Duration of the project January 2016 to June 2022

Budget €2,487,737

Financing



**162**  
ha restored  
and/or  
preserved

**3**

beneficiaries

**5**

areas  
of action

**3**

sites

**2**

regions

- **118 ha**  
of mudflats restored

- **10 ha**  
of natural intertidal  
areas created

- **20 ha**  
of meadows with improved  
water level management

- **10 ha**  
of dunes restored  
and/or preserved

- **4 ha**  
of salt marshes preserved



**Over**  
**260**  
meetings and  
discussions

**25**  
technical/  
financial  
partners

**Around**  
**200**  
press releases

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## Experimental restoration of mudflats

### in the Aiguillon Bay by removing old shellfish farming structures

Shellfish farming is a traditional activity in the Aiguillon Bay. Shellfish farms closest to the coast were abandoned in the 1960s, mainly due to the crisis caused by the prevalence of the *Mytilicola intestinalis* mussel parasite, but also because of the natural build-up of silt in the bay. The abandoned structures were left in place by farmers and have since favoured the development of wild oyster beds populated by the *Magallana gigas* Japanese oyster.

Furthermore, Aiguillon Bay is an important stopover and wintering site for water birds. The conservation of mudflats, rich in food resources, is essential for these birds.

The LIFE Baie de l'Aiguillon project therefore introduced an experimental action to restore the mudflats by removing the wild oyster beds and harvesting tables using two amphibious machines capable of moving in the mud, designed specifically for the task.

Monitoring before and after, including an inventory of benthic macrofauna (living in the seabed area), sediment analyses, measurement of organic matter and LIDAR topographic surveys provide information on the impact of the works on the environment.

Monitoring over several years to assess the possible recolonisation of oysters (undesirable) will make it possible to evaluate the relevance of the works and the advisability of pursuing similar projects elsewhere along the coast.



Aerial view of the wild oyster beds.  
© RNN baie de l'Aiguillon



**Annual increases in sediment deposits in the Aiguillon Bay**  
of around 285,000 m<sup>3</sup> per year, i.e. +1.4 cm +/- 0.5 cm per year on average.

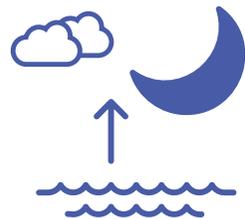
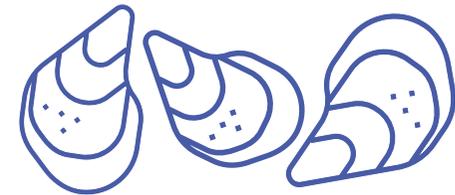
**3**  
seasons  
of works



**2**  
amphibious  
machines

**118**  
ha of mudflats restored

**42 000**  
m<sup>3</sup> of oyster shells crushed



**158**  
tidal works  
sessions

**34**  
of tables  
and waste  
metal  
recycled

**5 200** € / ha

 Average cost  
€12/m<sup>3</sup> processed

1. Oyster beds. © Thomas Jouanneau / Phonic Lips  
2. Floating auger barge fitted with a 3-metre front-end shredder powered by a 500-horsepower engine. © RNN baie de l'Aiguillon  
3. Monitoring of benthic macrofauna before the works. © RNN baie de l'Aiguillon

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## Depoldering and improving conditions

### for attracting birdlife at the site of the Prée Mizottière farm

Climate change is leading to rising sea levels which directly impact areas below the highest tide levels, such as the Marais Poitevin.

In this context of adaptation to climate change, rewilding of polder areas (land reclaimed from the sea) is one solution for limiting the impact of exceptional events such as tidal floods. Intertidal zones (areas between high and low tides) and salt marshes play a key role in coastal protection by dissipating the power of waves during coastal flooding. Depoldering creates an expansion zone for seawater, reducing the impact of flooding. This operation also reconnects natural areas with tidal rhythm.

In summer 2020, a weakened dyke located in a meander on the Sèvre Niortaise river was repositioned at the site of the Prée Mizottière farm (Vendée), owned by the Conservatoire du Littoral (Coastal Conservation Agency). This created ten hectares of natural intertidal area and improved protection of the farm.

This project will help researchers learn more about depoldering, which is still rare in France. Scientific monitoring will assess the evolution of biological and sedimentary components through topographical surveys, bird counts and monitoring benthic macrofauna. At the same time, collaboration with the PEPPS2-DPM (Depoldering Programme of Small Coastal Marshes) project, led by the University of Brest Occidentale in partnership with the University of Lorient and the University of Rennes 1, is monitoring vegetation and soils and assessing the sociological perception of the project among local stakeholders.

The additional restoration of hydraulic facilities means better management of water levels on the farm's grazing land, fostering the arrival of water birds on almost twenty hectares.



1. Formerly cultivated area. © RNN baie de l'Aiguillon  
2. Depoldered area at the end of the works, subject to flooding linked to the tidal rhythm since the high tides of September 2020. © RNN baie de l'Aiguillon



1. Construction of a new dyke © RNN baie de l'Aiguillon  
 2. Depoldered area in April 2022. We observe the installation of a natural halophilic habitat. © RNN baie de l'Aiguillon  
 3. Restored hydraulic structure. © RNN baie de l'Aiguillon

**2**  
 years of  
 consultation



**3**  
 months of work

**2**  
 years of  
 regulatory  
 procedures

**10**  
 ha of land depoldered

**Better management  
 of water levels on 20 ha  
 of grazing land**



**800**  
 of dykes  
 removed

**690**  
 of dykes  
 rebuilt

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## Preservation of the dune environment at the Pointe de l'Aiguillon and restoration of dune areas subjected to human activity.

The beaches and dunes at the Pointe de l'Aiguillon are victims of high levels of human activity including summer tourism and fishing on foot.

Home to numerous protected species of European and national interest (Kentish plover, Bluethroat, Tawny Pipit, dune carnation, etc.), these fragile areas suffer from erosion. Salt marshes are also an important refuge and source of food for fish.

The presence of an old campsite, concrete blocks used for sand extraction in the mid-20th century, and invasive ornamental plants remain from the urbanisation of the area before it was classified as a protected biotope area (APPB) in 1998 by regional authorities. The great Xynthia storm of 2010 caused significant damage to the site, leading the State to demolish homes.

The LIFE Baie de l'Aiguillon project has undertaken several phases of works to restore and preserve affected dune environments. Work to control public access to the dunes, with the installation

of traditional wicket fencing, has reduced trampling in the grey dunes and salt marshes. Work to cut down poplars, remove man-made structures and plants, and to modify traffic on the salt marshes has achieved the objectives and maintains the environmental biodiversity.

Signs to raise awareness about conservation of the Kentish plover and about the operations have been installed to inform people using the site.

Finally, mapping of natural habitats conducted in 2021 is being used to monitor vegetation regrowth.



Female Kentish plover (*Charadrius alexandrinus*) on her nest.  
© Jennifer Fabre

Total  
restored  
area  
**17.77 ha**

### Plage des Sablons

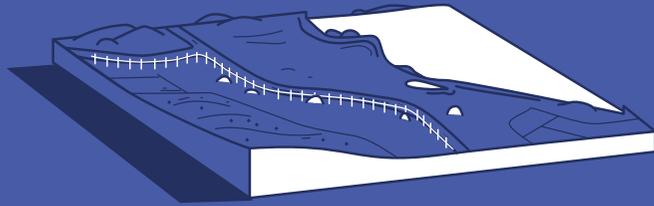
2.9 ha of restored  
dune habitats

### Former campsite

1.4 ha of restored  
dune habitats

### Pointe de l'Aiguillon

9.3 ha of preserved dunes  
and 4.17 ha of preserved  
salt marshes



**820 m**

of beach access paths restored

**550 m**

of wicket fencing installed

**1,040 m**

of smooth wire installed

**920 m<sup>2</sup>**

of poplar saplings removed

**460 m<sup>2</sup>**

of invasive plants removed

**5,000 m<sup>2</sup>**

of dune area cleaned

**150 m<sup>2</sup>**

of bitumen removed

**46**

poplars cut down

**4,000 m<sup>2</sup>**

area of tree stumps removed

**100 m<sup>3</sup>**

of waste removed  
(tree stumps, invasive plants, fencing, bitumen)

**6,000 m<sup>2</sup>**

of salt marshes preserved

**92 t**

of concrete blocks removed



1.



2.



3.

1. Pointe de l'Aiguillon, April 2022. © RNN baie de l'Aiguillon

2. Sand fences and smooth wire along a beach access path. © RNN baie de l'Aiguillon

3. *Dianthus gallicus*, a nationally protected species. © Alain Texier

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# Study of water quality along a land-sea continuum

The Aiguillon Bay and the Pertuis Breton form a coastal zone of great environmental and economic (shellfish farming) importance. This zone is influenced by freshwater inflows from the Marais Poitevin.

A study conducted by the French Biodiversity Agency audited knowledge about water quality in Aiguillon Bay. Samples were taken over a two-year period (January 2017 to January 2019) at eight sites in the bay and at the outlets of rivers flowing into it to understand the link between freshwater inputs from the Marais Poitevin and the coastal zone and the associated risks.

The results focus on several aspects: nutrients, carbon, particulate matter, pesticides and salinity (Coignot et al. 2020).

These more or less regular qualitative land inputs are one of the key factors in the functioning of the ecosystem, partly influencing the primary production of the bay. A study by the Marais Poitevin Public Agency has also been carried out to estimate quantitative inputs from the main outlets of the Marais Poitevin flowing into Aiguillon Bay (Deborde et al. 2021).



FOR MORE INFORMATION  
<https://life.reserve-baie-aiguillon.fr/en/water-study/>



1. Changing the probe on the Sèvre Niortaise, coastal station. © RNN baie de l'Aiguillon
2. Sampling by LEAV carried out using a Nansen bottle. © RNN baie de l'Aiguillon

Aerial view of the Sèvre Niortaise and  
the salt marshes of the Aiguillon Bay.  
© RNN baie de l'Aiguillon



Mallards (*Anas platyrhynchos*).  
© Trevor Froud

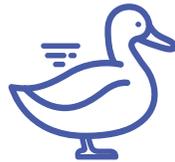


# Study of the use of the Aiguillon Bay and surrounding marshland by wintering ducks



1. Female mallard (*Anas platyrhynchos*) fitted with a GPS transmitter. © Pierre-Lou Chapot  
2. Identifying and counting seeds in a sample. © RNN baie de l'Aiguillon  
3. Earth plug sample © RNN baie de l'Aiguillon

**150**  
gizzards  
collected  
and analysed



**56**  
GPS tags  
installed

Approximately  
**75 000**  
recorded



Almost **11 500**  
soil core samples

The wetlands of the Marais Poitevin and the Aiguillon Bay form an ecological area comprising varied environments of international importance for water birds, particularly for wintering.

These environments are used independently by ducks according to their nychthemeral (day-night) rhythm.

The LIFE Baie de l'Aiguillon project has implemented a study to learn more about the ecological area for ducks. The study has three main strands:

1. fitting GPS tags to update locations of feeding and resting sites,
2. diet studies through analysis of the contents of gizzards of ducks hunted on the edges of the bay and,
3. studies into available food resources by sampling the soil seed bank on wet grassland and salt marshes.

The results of this study underpin and expand findings from a previous study into the functional role of the Marais Poitevin.

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## Communication and awareness

# Communication tools

over **90,000**

circulations and  
downloads of **all**  
communication tools.

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### A website

A website presents the natural environments and species of the Aiguillon Bay, the objectives of the project and the actions undertaken.

Publications and communication tools about the project can be downloaded from the Resources section of the website.



WEBSITE:  
<https://life.reserve-baie-aiguillon.fr/en/>



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### Social media presence

A Facebook account presents project news.

Over  
**1,300**  Facebook  
subscribers!



FACEBOOK:  
[@lifebaieaiguillon](https://www.facebook.com/lifebaieaiguillon)



Exhibition Poses en baie de l'Aiguillon. © Romuald Goudeau

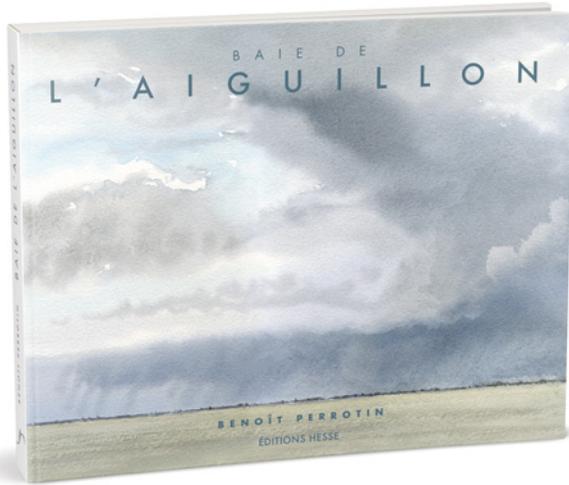
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### A travelling exhibition

A travelling exhibition entitled Poses en Baie de l'Aiguillon illustrates the natural bounty with pictures by professional and amateur photographers and illustrators.

## But also

This remarkable area is featured in a **book illustrated by Benoît Perrotin** with drawings, watercolours, oil paintings and pastels.



The **Chroniques estuariennes** newsletters give regular updates about the project.



A **discovery booklet for the general public** can be used as an educational aid for field trips (school groups, excursions).



**Thematic posters** are used as visual aids to present project actions.



**Feedback** is used to explain the conditions under which project operations are carried out.



Ten **educational videos** summarise the project actions (over 18 000 views).



Four **animated computer graphics** give an offbeat presentation of the issues addressed in the project.



Several **information and awareness-raising signs** have been mounted on project sites.



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# Communication and awareness

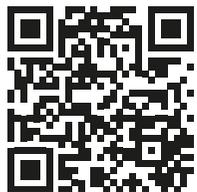
## Symposium and science shows



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### Symposiums

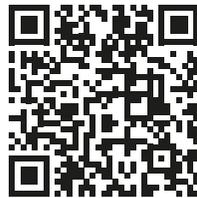
In November 2018, the **symposium “Adaptation of coastal marshes to climate change”** (*Adaptation des marais littoraux au changement climatique*), organised in partnership with the Atlantic Marshes Forum, was attended by over 450 participants in La Rochelle for three days.



DEDICATED WEBSITE:  
[maraislittoraux  
.myportfolio.com](http://maraislittoraux.myportfolio.com)



In October 2020, the **conference “Restoration of coastal environmental functions in a shellfish farming area”** (*Restauration des fonctionnalités environnementales du littoral en contexte conchylicole*) was attended by over 200 participants in La Rochelle for two days.



DEDICATED WEBSITE:  
[colloque-lifebaieaiguillon-  
restauration-littoral.com](http://colloque-lifebaieaiguillon-restauration-littoral.com)



In April 2022, the **review symposium for the project** was attended by over 150 participants in La Rochelle for two days with 600 connections on the first day.



DEDICATED WEBSITE:  
[colloque-final-  
lifebaieaiguillon.weebly.com](http://colloque-final-lifebaieaiguillon.weebly.com)



1. Field visit to Pointe de l'Aiguillon on November 29, 2018 during the symposium on climate change. © Romuald Goudeau
2. Field visit to Pointe de l'Aiguillon on April 7, 2022 during the restitution conference. © Romuald Goudeau



1. Poster of the first performance of the science show. © Romuald Goudeau  
 2. Eric Chaumillon and Mathieu Duméry on stage during the performance of the show on June 27, 2019 in Niort. © Darré  
 3. Éric Chaumillon, Mathieu Duméry and Guillaume Bouzard at the publication of the book Hé... la mer monte ! © PNR Marais poitevin in October 2019.

## Science shows and books

Science shows, an innovative and much heralded creative initiative!

Neither a conference nor a science lesson, *Hé... la mer monte !* (Hey... the sea is rising!) is a science show for the general public on climate change and its impact on the coastline.

It takes the form of a double act with a researcher (Eric Chaumillon) and a committed actor (Mathieu Duméry), using texts by comic strip author (Guillaume Bouzard).

A triumph, it was performed several times in 2019. Following this success, and outside the scope of the project, the book *Hé... la mer monte !*, written by the show's three protagonists, was co-published by the Marais Poitevin Natural Regional Park and Plume de Carotte in October 2019.

In addition, the Marais Poitevin Natural Regional Park organised a symposium in October 2019 about coastal risks. This event led to the creation of a second scientific show entitled *La mer contre-attaque !* (The Sea fights back!) and the publication of the accompanying book *La mer contre-attaque !* in October 2021 by the same authors.

**3**  
symposiums



**2**  
science shows

**1 tour**  
of the science show  
*Hé... la mer monte !*

**2**  
books



**800**  
conference participants

**2,000**  
spectators at  
the science shows

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## Conclusions **and outlook**

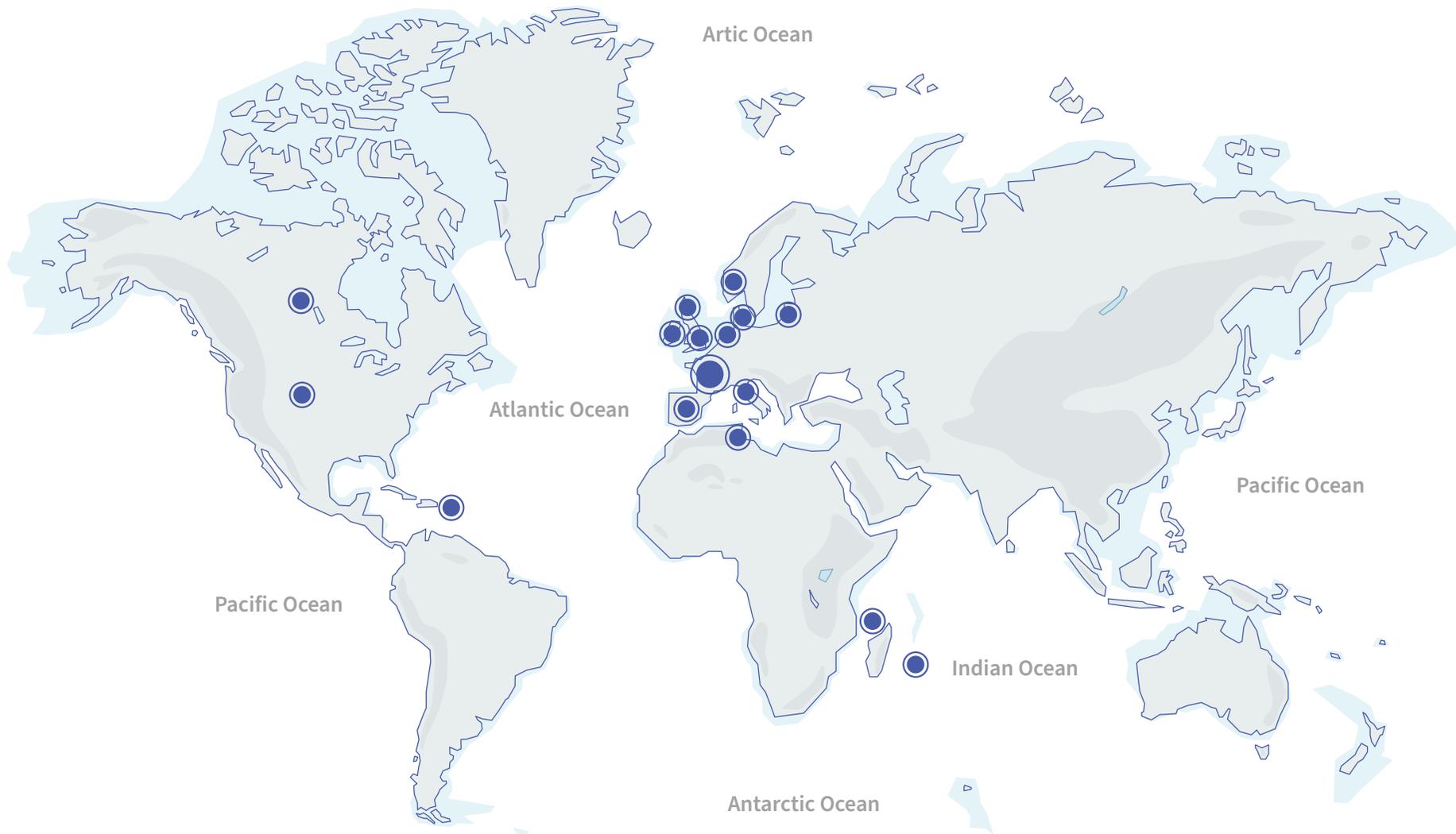
The LIFE Baie de l'Aiguillon project has led to the implementation of concrete actions to restore and preserve coastal environments. In addition to significant knowledge acquisition, the project has led to the development of innovations, such as the creation of science shows and the invention of machines, capable of working on substrates with low bearing capacity, used for mudflat restoration work.

The results of the project's actions have enhanced evaluation of the Aiguillon Bay National Nature Reserve's management plan (2013-2022) and contributed to drafting the next version (2023-2032).

Events and numerous communication tools have helped to raise awareness among a wide national and international audience.

Mudflats of the Aiguillon Bay. © Quentin Gama |





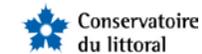
● Countries reached by the LIFE Baie de l'Aiguillon awareness tools

# Partners

The LIFE Baie de l'Aiguillon project extends its thanks to all financial, technical and institutional partners who have contributed to this project.



Team of the LIFE Baie de l'Aiguillon project



Manager of the Prée Mizottière farm  
Jean-Paul Rault

Commune of Sainte Radégonde des-Noyers





## **Le Parc**

naturel régional  
du Marais poitevin

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2, rue de l'église

79 510 COULON

Tel : +33 (0)5 49 35 15 20

✉ [correspondance@parc-marais-poitevin.fr](mailto:correspondance@parc-marais-poitevin.fr)

### **The Aiguillon Bay National Nature Reserve The French Biodiversity Agency (OFB) and the League for the Protection of Birds (LPO)**

Ferme de la Prée Mizottière

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### **For further information**

🌐 <https://life.reserve-baie-aiguillon.fr/en/>

📘 [facebook.com/lifebaieaiguillon](https://facebook.com/lifebaieaiguillon)

[pnr.parc-marais-poitevin.fr](http://pnr.parc-marais-poitevin.fr)