

LEVERS FOR SUCCESS

TECHNICAL ASPECTS AND PROJECT DESIGN

- **Innovate:** Experimental projects often require innovative techniques whose development phase must be taken into account. To be able to move on both water and mud, a 20-ton amphibious excavator mounted on 2 floaters was conceived and designed. It includes a grinder with a hopper and can advance 80 metres per tide, at different depths. The machine used for phase 2 was adapted and improved to speed up the work which had fallen behind schedule.

COMMITMENT OF STAKEHOLDERS

- **Economic benefits and awareness-raising:** The Life Baie de l'Aiguillon project promotes the local economy, with more than 75% of the expenditures made in Charente-Maritime, Deux-Sèvres and Vendée. The project has invested nearly 17% of the expenses in communication tools designed to promote its actions and to raise awareness among the general public, elected officials and other decision-makers
- **Economic viability:** Establishment of an oyster deposit processing chain.

ACTION MONITORING AND REPLICABILITY

- **Assessment:** The Aiguillon Bay project is based on numerous monitoring operations and comparative sites, such as Marennes Oléron Bay or the Saint Froult mudflats. Birdlife International's TESSA toolbox, adapted into French by the French Birds Protection Society (LPO), was used to assess the value of the ecosystem services provided by the sites before and after the works have been carried out.
- **Replicability and demonstrative value:** The results and feedback of this project are being widely disseminated. It is hoped that local authorities, the State or other countries will be able to take up this solution and disseminate it on a larger scale.
- **Perpetuation:** Integration into the Nature 2050 programme guarantees sustainable monitoring until 2050. The post-Life project conservation plan seeks to identify the means (human and financial) to continue the initiated actions in the long term.

TAKING IT FURTHER

- If the non-recolonisation of the restored sectors is confirmed in the long term (positive results in the first two years), it would be interesting to reproduce this work on the 300 ha of mudflats still colonised by Pacific Oyster in Aiguillon Bay.
- A recycling test shows possibilities to explore the recovery of oyster shells in a composting process to produce an organo-calcium amendment to be used as landfill material or shell scouring sand.
- The machine created within the framework of the project, designed to work on substrates with low bearing capacity, could be mobilised by concession-holders and State departments to clean the concession at the time of the cessation of activity.

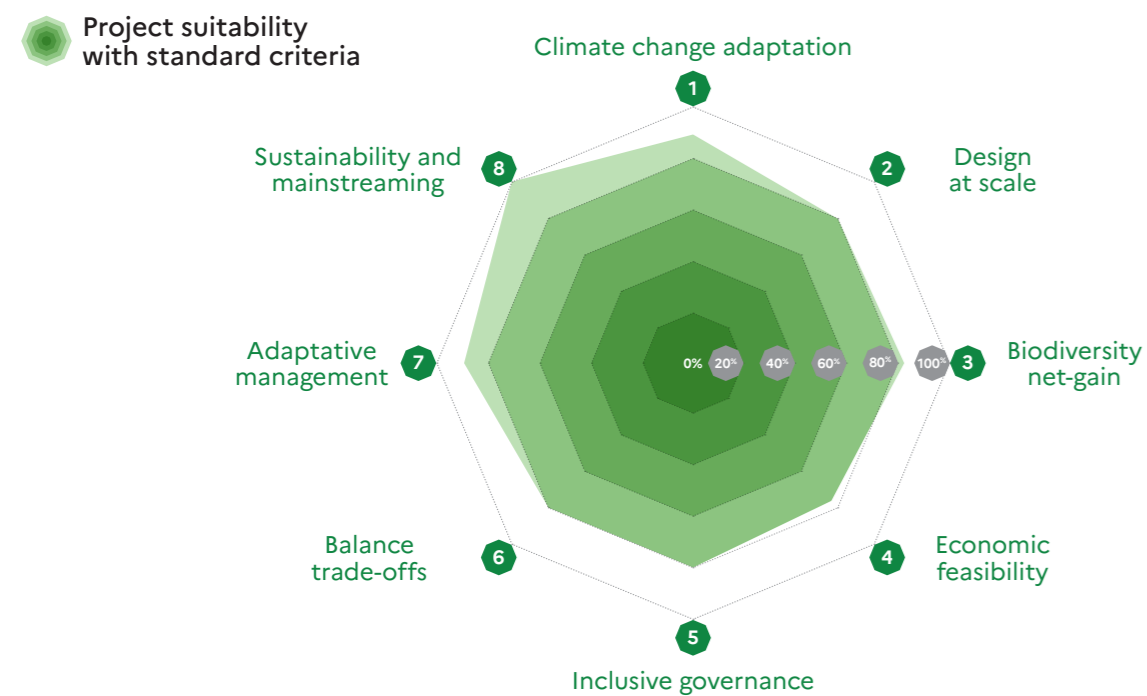
FOR MORE INFORMATION

- Nature 2050 programme web page <https://www.cdc-biodiversite.fr/le-programme-nature-2050/>
- Downloadable documents related to Life Baie de l'Aiguillon (studies, feedback, etc.) <https://life.reserve-baie-aiguillon.fr/documents-a-telecharger/>
- Symposium presenting the Life Baie de l'Aiguillon project <https://colloque-final-lifebaieaiguillon.weebly.com>

PROJECT LEADER

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ASSESSMENT ACCORDING TO THE IUCN GLOBAL STANDARD FOR NATURE BASED SOLUTIONS



BAY OF AIGUILLON 2016 - 2050

IDENTITY CARD

GEOGRAPHICAL LOCATION

Vendée (85), Charente-Maritime (17)

TARGETED ADAPTATION ISSUE(S)

Submersion

HABITAT(S) CONCERNED

Coastal

TYPE(S) DE SAFN

Restoration of ecosystems:
ecological restoration of a coastal ecosystem.

PROJECT LEADER(S) AND ASSOCIATED PARTNER(S)

- **LPO France**
- Marais-Poitevin Regional Natural Park
- Life Baie de l'Aiguillon
- Natura 2000
- **CDC Biodiversité** Nature 2050 programme
- Regional Shellfish Farming Committee (CRC) of Charente Maritime and Pays de la Loire
- Departmental Directorate of Territories and the Sea (DDTM) of Charente Maritime and Vendée
- French Biodiversity Agency (OFB)

FUNDERS AND BUDGET

Action to restore the mudflats:
Life Baie de l'Aiguillon, Loire-Brittany Water Agency, Nouvelle-Aquitaine Region, DDTM, Environment Ministry, CDC Biodiversité Nature 2050 Programme, France Relance Plan, Marais Poitevin PNR

- Budget: **570 000 €**
- Total budget of Life project: **2 487 727 €**

In addition, the cost of perpetuating and monitoring the project until 2050 will be borne by the LPO and CDC Biodiversité.



Mudflats after oyster bed removal work, 2020
© RNN Baie de l'Aiguillon

PROJECT OBJECTIVES

- **For climate change adaptation**
Restore a buffer zone of mudflats at the land-sea interface to deal with rising sea levels.
- **For biodiversity**
Restore a mudflat habitat favourable to harbouring wintering waterbirds; preserve the ecological functions of the mudflats
- **For the local community**
Preserve the cultural services provided by the Aiguillon Bay site and associated tourist activities, notably birdwatching



Innovative machine (first version) removing Oyster beds, 2019
© Aiguillon Bay NNR

CONTEXT AND ISSUES

At the mouth of the Sèvre Niortaise river, Aiguillon Bay is a site classified as a national nature reserve, internationally recognised as a haven for wintering and migratory birds. Every year, thousands of birds come to find refuge in these mudflats and salt marshes, making the bay an essential resting and feeding place for many species. Considered as threatened in Europe (Annex I of the Habitats Directive), this natural area has been significantly impacted by the progressive abandonment of oyster farming concessions over the years. Massive clusters of wild Pacific Oyster deposits, called «crassats», have taken over and proliferated in the Bay, accelerating sedimentation and reducing the surface area of the mudflats. In the face of rising temperatures and rising water levels, it is essential to preserve mudflats in order to maintain their ecological functions as a buffer zone and to guarantee the availability of sufficient food resources for migratory birds. The project to restore the Aiguillon Bay mudflats aims to implement an innovative methodology to remove the «crassats» on three sites (Pointe de l'Aiguillon, Charron, Canal de Luçon) in the Bay and restore a natural habitat of mudflats on these areas. This action is part of the Life Baie de l'Aiguillon project carried out by the Marais Poitevin RNP and its partners (LPO and ONCFS), as well as the managers of the Aiguillon Bay National Nature Reserve.

REGULATORY CONTEXT OF THE PROJECT

- Aiguillon Bay National Nature Reserve
- Marais Poitevin RNP
- Marais Poitevin Natura 2000 Birds Directive Sites

ACTIONS IMPLEMENTED

A preliminary analysis and experimentation phase but also regulatory instructions lasted from 2016 to 2018. The work began in 2019 and required the deployment of a novel technique of removing and grinding oyster tables on site to prevent recolonisation. In total, 80 people and about 60 boats participated in the work. The cumulative

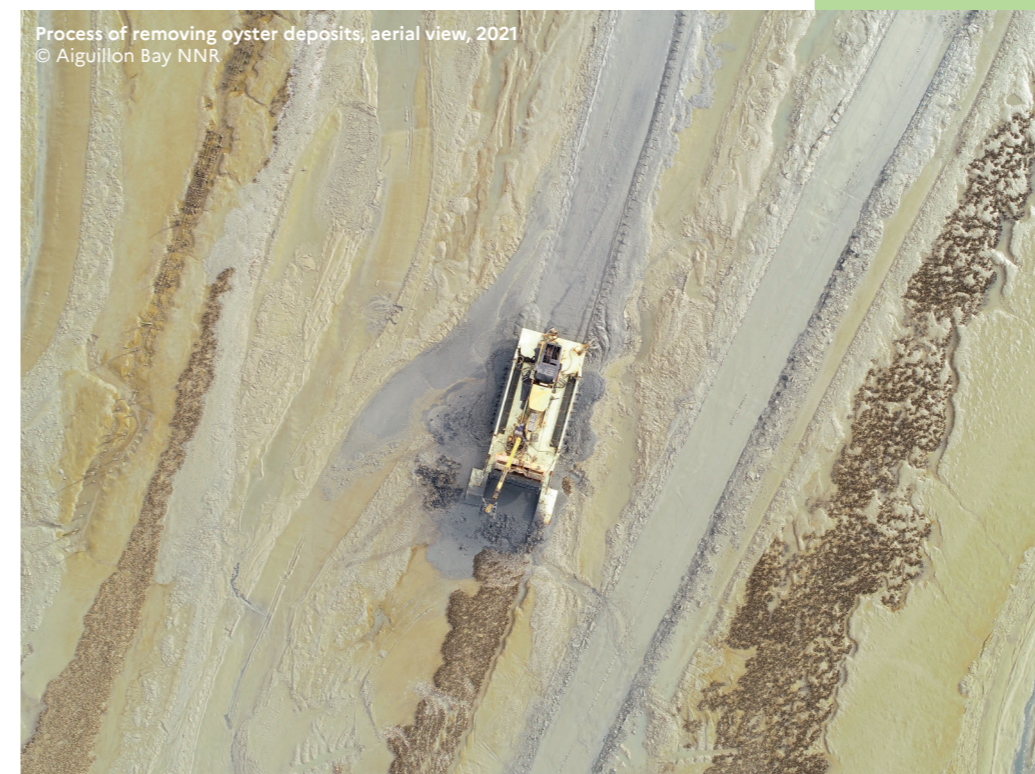
work phases running from 2019 to 2021 have restored 118 hectares of mudflats over 158 low tides. Approximately 61,400m³ of shellfish tables and equipment have been ground and 34 tons of scrap metal were recycled. An oyster «crassat» treatment process has also been set up through a series of tests to identify recovery opportunities.

SCHEDULE

PROJECT LIFESPAN	
2016	Start of Life Baie de l'Aiguillon; Integration in Nature 2050 programme
2017	Consultation with shellfish farming sector Mapping Start of monitoring
2018	Symposium on the adaptation of coastal marshes to climate change
2019	Request for extension of Life project until 2022 Phase 1 works
2020	Additional fund seeking Phase 2 works
2021	Phase 3 works
2022	End of Life Baie de l'Aiguillon project; post-Life consultation
2050	End of Nature 2050 programme partnership End of Nature 2050 monitoring

GOVERNANCE ADOPTED

The overall implementation of the project is conducted by a coordination team and a technical team consisting of agents of the Marais Poitevin Regional Natural Park, representatives of the LPO and OFB. Four bodies assume the general coordination of the project: a steering committee, a technical committee, a drafting committee and a monitoring committee, which meet at regular intervals. The CDC Biodiversité's team of the Nature 2050 programme will support the defining and monitoring of project indicators until 2050.



Process of removing oyster deposits, aerial view, 2021
© Aiguillon Bay NNR

BENEFITS AND CONTRIBUTIONS OF THE PROJECT



BENEFITS REGARDING TARGET ADAPTATION ISSUES

- **Submersion:** Mudflats are natural sedimentation areas acting as a buffer for maintaining the coastline.



OTHER BENEFITS CAUSED

- **Ecosystem restoration:** 118 hectares of mudflats have been restored to their natural ecological functions.
- **Specific abundance:** Return of wintering waterfowl at a key stage of their migration route.



OTHER BENEFITS CAUSED

- **Socio-economic benefits:** Nature-based leisure activities, harvesting of wild food, cultivated food commodities and cultural services.
- **Greenhouse gas storage:** Restored mudflats act as carbon sinks.
- **Water purification:** Due to the presence of the microphytobenthos, the photosynthetic capacity of mudflats can be very high. The oxygen produced contributes to filtering the water.
- **Mussel farming:** Improvement of the working conditions of the shellfish farmers thanks to reduced competition generated by wild Pacific Oysters. A study will determine whether the improvement of water quality in connection with the removal of oyster deposits leads to reduced mussel farming mortality in Aiguillon Bay.

MONITORING INDICATORS

Climate change adaptation

- Checking for non-recolonisation by wild oysters
- LIDAR topographical monitoring
- Study of morphological trends in the bay

Biodiversity

- Survey of mudflat fauna in the area of the works.
- Bio-sedimentary studies of benthic communities of oyster reefs (LIENS), La Rochelle University
- Monthly waterbird counts (Anatidae and waders)

Other

- Demonstrative effect of the project by monitoring promotion and dissemination actions
- Evaluation of the social and economic impact of Life actions (TESSA toolbox)