International Partnership on MPAs, Biodiversity and Climate Change

Blue Carbon in Marine Protected Areas

CASE STUDY

The restoration of Zostera seagrass meadows in the Bay of Arcachon: another ecological restoration project

Collection of reproductive shoots.

The International Partnership on MPAs, Biodiversity and Climate Change is an alliance of government agencies and organisations from across the world, working together to progress the evidence base around the role of Marine Protected Areas (MPAs) and biodiversity in tackling climate change.

Our vision is for global decision-makers to implement MPA networks as nature-based solutions for biodiversity conservation and climate change mitigation, adaptation, and resilience.

For further information about the Partnership please visit **www.mpabioclimate.org**

CASE STUDY

The restoration of Zostera seagrass meadows in the Bay of Arcachon: another ecological restoration project

The Bay of Arcachon is home to one of Europe's largest seagrass meadows: Zostera seagrasses. The Marine Nature Park of the Arcachon Bay (PNMBA) is currently implementing an ecological restoration project of Zostera seagrasses, which is a major objective of the Management Plan of the Marine Nature Park.

The marine heatwave experienced in France in 2003 increased the toxicity of chemical pollutants on seagrass, initiating a decline that was further amplified by the resulting changes in local hydrodynamics. Consequently, the seagrass beds experienced a rapid loss, with Zostera marina declining by up to 84% and Zostera noltei by 45%. The ecological restoration project of Zostera seagrasses is then one of the main goals planned in the management plan by 2032.

Outcomes from Case Study

The PNMBA and its local partners have implemented management measures in order to mitigate anthropogenic pressures and promote passive restoration. Studies, monitoring, experimentation, citizen science actions, and awareness-raising initiatives (such as participatory work sites) are also being undertaken.

MPAs help achieve the United Nations Convention on Biological Diversity and Framework Convention on Climate Change targets, by implementing protection measures, mainly for coastal ecosystems. Moreover, the French MPA network contributes to those policies, particularly the European Directives which play a major role in the preservation of the oceans and associated ecosystem services.

Future Desired Outcomes

The Bay of Arcachon also serves as a pilot site for the European REST-COAST project, which includes the objective of estimating the carbon storage capacity of seagrass beds across different sediment types and hydrodynamic exposures.

Zostera noltei Seeding.

Volunteers.

The PNMBA is currently working on mapping the habitat suitability for seagrass over the whole bay in order to design an optimal restoration plan for the upcoming years using those restoration methods. Additionally, the PNMBA is part of The Seagrass Consortium as a pilot site to improve and upscale seagrass restoration practices.

How do these outcomes address climate change adaptation strategies, climate change mitigation, and conserving biodiversity?

Seagrass beds are known for their significant role as major marine carbon sinks. They have the ability to sequester carbon from the atmosphere and suspended organic matter, effectively burying it in the sediment. Although the primary objective of the project is not to restore seagrass beds to mitigate the effects of climate change, it could play a role as restored seagrass beds would regain their function as carbon sinks and cope with climate change.

How are nations collaborating on the case study or does it promote international collaboration?

The PNMBA is collaborating with the University of Groningen and The Fieldwork Company (Netherland) to explore simple, cost-effective, and non-invasive methods like transplantation and seeding. These techniques have shown success in similar contexts, such as the Wadden Sea.

Next Steps/Future Actions Related to the Case Study

The project could share results about techniques and models used in order to inspire other countries to implement projects based on restoration.

References:

Fauvel, T. Marine Nature Park Bassin d'Arcachon. URL: https://parc-marin-bassin-arcachon.fr/