BLUE CONNECT



BLUE CONNECT

D4.1 Scoping and shortfall analysis on baseline data and practices to support achieving efficient MPA conservation and management

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Project No.	**1011656759**
Project Acronym	**BLUE CONNECT**
Project Title	**BLUE CONNECT**
Call	**HORIZON-MISS-2023-OCEAN-01**
Start Date	**01.09.2024**
Duration	**36 Months**
Delivery Title	**Scoping and shortfall analysis on baseline data and practices to support achieving efficient MPA conservation and management**
Due Date Delivery	**01.06.2025**
Date of Submission	**31.08.2025**
Deliverable Lead Partner	**VLIZ**
Dissemination Level	**Public**

Recommended citation:
Baeckelandt M., De Raedemaecker F., Withouck I., Whatley L., Debusschere E., Trabulo R., Kvanneid A.J., Friedrich L., Otero Villanueva M.D.M., Bauer B., Fabres J., Jacob M., Vilmin L., Stancheva M., Stanchev H., Guitierrez D., Santos N., de Ramos B., Shucksmith R., Hague E., Dalmau Elorza A., de Juan Carbonell C., Eggermont M., Kostovska D., Pavlova D., Uzunov S., Zanella A., Macedo T., Garcia Varas J.L., Esparza O., Spinu A., Sáez J. (2025) *Scoping and shortfall analysis on baseline data and practices to support achieving efficient MPA conservation and management. Deliverable – D4.1 under the WP4 of the BLUE CONNECT project (GA n° 1011656759)*

Document History			
Version	**Date**	**Note**	**Revised by**
01	11.08.25	Specific revision	Margarita Stancheva (CCMS), Phara Cockaert (JDN)

Name	**Organization**
Marie Baeckelandt	VLIZ
Fien De Raedemaecker	VLIZ
Inne Withouck	VLIZ

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Lawrence Whatley	VLIZ
Elisabeth Debusschere	VLIZ
Rita Trabulo	RBINS
Aase Jeanette Kvanneid	NIVA
Laura Friedrich	NIVA
María Del Mar Otero Villanueva	UMA
Barbara Bauer	UMA
Joan Fabres	SALT
Malin Jacob	SALT
Lauriane Vilmin	DELTARES
Margarita Stancheva	CCMS
Hristo Stanchev	CCMS
Débora Guitierrez	UAc
Natali Santos	UAc
Bruna de Ramos	UAc/FGF
Rachel Shucksmith	UHI
Emily Hague	UHI
Andreu Dalmau Elorza	SUBMON
Carlos de Juan Carbonell	SUBMON
Mieke Eggermont	UGent-ARC
Diyana Kostovska	BBF
Diana Pavlova	BBF
Spas Uzunov	BBF
Andrea Zanella	WWF IT
Thaís Macedo	FMB
José Luis Garcia Varas	WWF ES
Oscar Esparza	WWF ES
Alina Spinu	NIMRD
Jorge Sáez	Soldecocos

Lead	Participants
VLIZ	RBINS, UMA, NIVA, CCMS, SALT, WWF Spain, UAc, BBF, NIMRD, UGENT, SUBMON, Deltares, HELCOM, FMB, UHI, FGF, WWF Italia

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Acronyms

AUV - Autonomous underwater vehicle
BBNJ – Biodiversity beyond national jurisdiction
BPNS – Belgian part of the North Sea
CBD – Convention on Biological Diversity
CFP – Common fisheries policy
DS – Demonstration site
EBSA – Ecologically or biologically significant marine areas
EEZ – Exclusive economic zone
EMFF - European maritime and fisheries fund
EU – European Union
EUBS2030 – European biodiversity strategy 2030
GDPR – General Data Protection Regulation
ICCAT – International commission for the conservation of Atlantic Tuna
ICES – Internal council for the exploration of the sea
ICZM – Integrated coastal zone management
IMMA – Important marine mammal areas
IMO – International maritime organization
IPBES – Intergovernmental platform for biodiversity and ecosystem services
LSWG – Local stakeholder working group
MITECO – The Ministry for the Ecological Transition and the Demographic Challenge
MPA – Marine protected area
MS – Member States
MSFD – Marine strategy framework directive
MSP – Maritime spatial planning
NGO – Non-governmental organization
OECM – Other Effective Area-Based Conservation Measure
OSPAR – Oslo-Paris Convention
PSSA – Particularly Sensitive Sea Area
SACs – Special areas of conservation
SDGs – United Nations sustainable development goals
SPAs – Special protection areas
UNESCO – United Nations educational, scientific and cultural organization
WFD – Water framework directive
WP – Work packages

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

1. Executive Summary 6
2. Introduction 7
3. Methods 9
Phase 1: Collection of baseline information and data sources 10
3.1.1 Factual information 11
3.1.2 Data Inventory 15
3.1.3 Best practices and barriers 15
Phase 2: Additional requests to complete baseline information and guidelines for interviews with the LSWG 16
3.2.1 Tool Inventory 16
3.2.2 Interviews with LSWG 17
Phase 3: Collection of local needs from the general public using consultations 18
4. Results 19
4.1 Desktop analysis – Compilation of a knowledge base 19
4.1.1 Introduction to the demonstration sites 19
4.1.2 Environmental socio-economic information 27
4.1.3 Legal framework and protection status 30
4.1.4 MPA monitoring and evaluation 36
4.1.5 Restoration measures 39
4.1.6 MPA expansion and strict protection 40
4.1.7 Ecological connectivity 42
4.1.8 Participation-related information 43
4.1.9 Existing tool inventory 47
4.1.10 Existing data inventory 48
4.2 Interviews and survey – Collection of local issues and needs raised by stakeholders and the general public 50
4.2.1 Local needs and expectations interviews 50
4.2.2 Public survey 53
5. Conclusion 56
Annexes 58
Annex 1: Guidelines 58
Annex 2: Interview and survey questions 71
Annex 3: Environmental socio-economic information 76
Annex 4: Protection status and conservation objectives 97
Annex 5: MPA monitoring and restoration measures 117
Annex 6: Participation related information 128

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Annex 7: Tool inventory results 133
Annex 8: Data inventory results 135
Annex 9: Survey analysis 137
Annex 10: Supporting background material 151
References 164

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

1. Executive Summary

This deliverable 4.1 (D4.1) presents a baseline scoping and analysis of the data, information, needs, and stakeholders' views from the 12 established Demonstration Sites (DSs) in the BLUE CONNECT project. The overarching aim of the BLUE CONNECT project, funded under the Horizon Europe Program (Mission Ocean and Waters), is to advance marine conservation and restoration through inclusive, science-based planning and co-management approaches. The project contributes to the implementation of the European Union (EU) Biodiversity Strategy for 2030 by developing, promoting, and demonstrating a systematic approach to marine conservation planning and management.

This initial scoping compiles spatial and contextual data on marine biodiversity, human activities, environmental pressures, monitoring systems, ecological connectivity, restoration initiatives, MPA expansion, strict protection, and management practices. It also captures key concerns, expectations, and needs expressed by local stakeholders and the public.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

2. Introduction

Human activities and their cumulative pressures are increasingly threatening marine ecosystems (Mazaris et al., 2019; Jouffray et al., 2020; Katsanevakis et al., 2020). In response to escalating ocean degradation and biodiversity loss, the number and size of MPAs worldwide have expanded significantly over the past decades (Maestro et al., 2019). Well managed MPAs are widely recognized as area-based tools for conserving marine biodiversity and maintaining ecosystem services (IPBES, 2019). Scientific evidence demonstrates that MPAs provide a range of ecological benefits, such as conserving biodiversity, safeguarding vulnerable species and critical habitats, regulating fishing pressures, supporting population recovery and spillover effects (Di Cintio et al. 2023).

Their importance is recognized and promoted by major international frameworks such as the United Nations Sustainable Development Goals (SDGs), the UNESCO World Heritage Convention, the Convention on Biological Diversity (CBD), and the recent Agreement on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ Agreement). In line with this global trend, the European Union's Biodiversity Strategy for 2030 (EUBS2030) sets ambitious targets to protect at least 30% of European seas, with a minimum of 10% designated as strictly protected areas (European Commission, 2020).

Nonetheless, many governments face substantial challenges in the designation, implementation, and effective long-term management of MPAs, which often hampers their ability to meet conservation objectives. Di Cintio et al. (2023) highlight that the effectiveness of MPAs is strongly contingent upon the meaningful involvement of local stakeholders throughout the planning and management processes. Involving fishers, industries, authorities, coastal communities, and other key actors, fosters greater compliance, enables adaptive governance, and ensures that conservation objectives are well integrated with local economic and social contexts (Gutiérrez et al., 2011; Cinner et al., 2016).

In addition to expanding and strengthening protection, the restoration of at least 20% of degraded marine and coastal ecosystems by 2030 is a legally binding obligation for EU Member States (MS) under the Nature Restoration Regulation. This restoration effort is essential to complement MPAs and to enhance the ecological resilience of marine areas.

In this context, the BLUE CONNECT project, funded under the Horizon Europe Program, seeks to advance marine conservation and restoration by promoting inclusive, science-based planning and co-management approaches.

Operating across multiple DSs within four sea basins, across Europe (the North Sea, the Atlantic Ocean, the Mediterranean and Black Sea), the project seeks to develop, promote, and demonstrate a systematic approach to marine conservation planning and management. A central objective is to foster long-term co-ownership of marine conservation efforts by engaging stakeholders from the earliest stages of planning.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

The BLUE CONNECT DSs are site-specific local MPAs, parts of national MPAs and ecological networks, or regional networks of MPAs, covering a wide range of ecosystem functions and services and including important seabed habitats to allow for integration of seabed protection and restoration (see Figure 1). The 12 DSs are Macaronesia, Cabo Roche, Pitiusas Islands, Cetacean Migration Corridor, L'Albera, Italian Northern Adriatic, Burgas Bay, Central Romanian Coast, Raet National Park, Vlaamse Banken MPA: Hinder Banks, Scottish MPA Network and Southern Adriatic Ionian Strait.

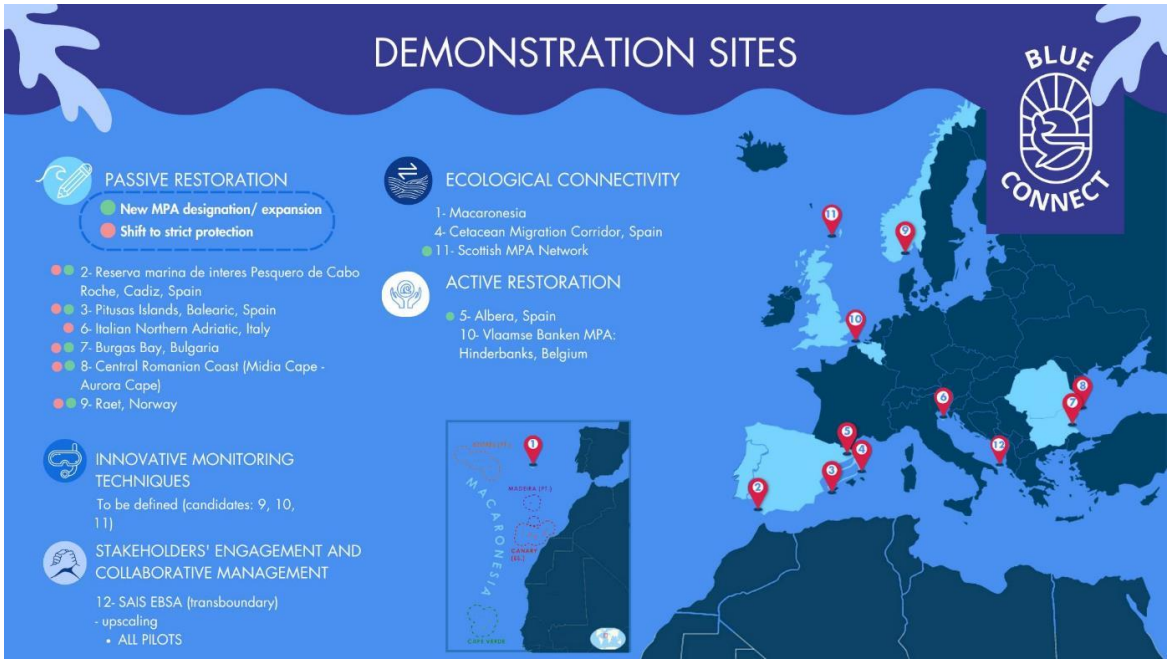


Figure 1. *BLUE CONNECT Demonstration Sites' locations and their thematic focus within the project. Themes include passive restoration, ecological connectivity, innovative monitoring techniques, stakeholder engagement and collaborative management, and active restoration (source: grant agreement).*

D4.1 provides a baseline scoping and analysis of the demonstration sites. It compiles spatial and contextual data on marine biodiversity, human activities, environmental pressures, current monitoring systems, ecological connectivity, restoration activities, MPA expansion, strict protection, management practices and existing co-management schemes. Additionally, it gathers relevant issues reflecting stakeholders and public (including MPA managers/regulators, planners, sector representatives, NGOs, scientists, local officials, etc.) concerns, expectations, and economic, societal, and cultural needs.

This initial scoping complements other tasks within the project (T2.1, T4.2, T3.1, T5.1 and T5.2) and informs the further development of conservation objectives, measures, monitoring protocols, and management goals. It also supports the collaborative development of the Blueprints in cooperation with stakeholders.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

3. Methods

The scoping analysis consists of a compilation of a knowledge base and the collection of local needs and expectations:

- The knowledge base for each DS consists of the existing state of the art information focusing on three types of baseline information: factual information, existing data sources, and best practices and barriers.
- The local needs and expectations address local issues and needs raised by stakeholders and the general public (incl. MPA managers/regulators, planners, sector representatives, NGOs, scientists, local officials, etc.).

It was organised in four phases, designed to gather information from a different target group: DS partners, members of the Local Stakeholder Working Group (LSWG), and local citizens (see Table 1).

***Table 1**. Summary of the four phases of T4.1*

Phases for the scoping analysis		Materials provided	Who to ask?	Timing
Phase 1	**Collection of baseline information and data sources using expert knowledge and desktop analysis** 	• Part A: guidelines • Part B: entry form • Data inventory table	DS Partners	5 Nov – March 2025
Phase 2	• **Additional requests to complete baseline information** • **Interviews with LSWG to:** a. **Validate baseline information** b. **Collect local issues and needs** 	• Tools inventory table • Phase 1 materials • Phase 2 guidelines	All LSWG members (Specific LSWG members identified to help validate/complete the desktop study)	2 Dec – April 2025
Phase 3	**Collection of local needs from the general public using consultations** 	• Phase 3 guidelines for consultations • Online survey format	Local citizens	Feb – May 2025
Phase 4	**Compilation and analysis of all DS results and handover of requested information to the relevant tasks and/or analysis carried out by DS partners themselves**		VLIZ, with support from T4.1 partners	May-July 2025

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Phase 1: Collection of baseline information and data sources

The development of the entry form (Part B) was initiated with a thorough review of the grant agreement to identify data requirements for the DSs across the various tasks of the BLUE CONNECT project. The accompanying guidelines (Part A) provide background information on Task 4.1, outline the methodology for its implementation, and give detailed instructions to DS partners for collecting the information required for the scoping analysis. The entry form was then shared with DS partners, along with the guidelines. The entry form consisted of a series of tables and guiding questions designed to collect information in a standardized format across several thematic components, defined in Part A (see Table 2). The guidelines (Part A) are available in Annex 1.

***Table 2**. Overview of the scope of the knowledge base compiled in Task 4.1, as defined in the guidelines (Part A).*

Overview of the thematic components of the knowledge base to be compiled for each DS		
Factual information	Biophysical 	Features of conservation interest
	Socio-economic 	Activities
		Pressures
		Impacts
		Scenarios
	Legal framework and governance 	Existing MPAs overview & legal framework
		MPA objectives
		MPA measures
		MPA management plans
		MPA monitoring
		MPA evaluation
		Restoration measures
		MPA Financing mechanisms
	Participation 	Stakeholder involvement
Data inventory		Ecological data
		Physical/abiotic data
		Biogeochemical data
		Socio-economic data
		Climate data
		Spatial regulatory data
		Existing indicators, models and protocols
Best practices and barriers		MPA management and governance
		Strict protection
		MPA expansion / new MPAs
		Connectivity
		Restoration practices
		Participation-related practices
		Economic, societal and cultural needs

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

3.1.1 Factual information

To gather information on the biophysical components of the DSs, a relevance ranking exercise was conducted based on the source typology outlined in Bocci et al. (2024). This exercise involved assessing and ranking the conservation interest of various taxonomic groups and habitats.

The collection of socio-economic information was structured in line with the Marine Strategy Framework Directive (MSFD) typology of anthropogenic activities (see Table 3), pressures (see Table 4), and impacts (see Table 5). DS partners were asked to rank these elements according to their observed level of occurrence within the DSs. In addition, information was collected on expected future developments, including anticipated changes in activities and pressures within the site.

***Table 3**. Uses and human activities, as defined in the guidelines (Part A). (Source: Directive (EU) 2017/845 – Table 2a, as per method Bocci et al., 2024).*

Use	Activity
Physical restructuring of rivers, coastline or seabed (water management)	Land claim Canalisation and other watercourse modifications Coastal defence and flood protection Offshore structures (other than for oil/gas/renewables) Restructuring of seabed morphology, including dredging and depositing of materials
Extraction of non-living resources	Extraction of minerals (rock, metal ores, gravel, sand, shell) Extraction of oil and gas, including infrastructure Extraction of salt Extraction of water
Production of energy	Renewable energy generation (wind, wave and tidal power), including infrastructure Non-renewable energy generation Transmission of electricity and communications (cables)
Extraction of living resources	Fish and shellfish harvesting (professional, recreational) Fish and shellfish processing Marine plant harvesting Hunting and collecting for other purposes
Cultivation of living resources	Aquaculture - marine, including infrastructure Aquaculture - freshwater Agriculture Forestry
Transport	Transport infrastructure Transport - shipping Transport - air Transport - land
Urban and industrial uses	Urban uses Industrial uses Waste treatment and disposal
Tourism and leisure	Tourism and leisure infrastructure Tourism and leisure activities
Security/defence	Military operations (subject to Article 2(2))
Education and research	Research, survey and educational activities

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 4. *Anthropogenic pressures, as defined in the guidelines (Part A). (Source: Directive (EU) 2017/845 – Table 2a, as per method Bocci et al., 2024).*

Pressure type	Pressure
Biological	Input or spread of non-indigenous and invasive species
	Disease outbreak of microbial pathogens
	Input of genetically modified species and translocation of native species
	Loss of, or change to, natural biological communities due to cultivation of animal or plant species
	Disturbance of species (e.g. where they breed, rest and feed) due to human presence
	Extraction of, or mortality/injury to, wild species (by commercial and recreational fishing and other activities)
Physical	Physical disturbance to seabed (temporary or reversible)
	Physical loss (due to permanent change of seabed substrate or morphology and to extraction of seabed substrate)
	Changes to hydrological conditions
Substances, litter and energy	Input of nutrients — diffuse sources, point sources, atmospheric deposition
	Input of other substances (e.g. synthetic substances, non-synthetic substances, radionuclides) — diffuse sources, point sources, atmospheric deposition, acute events
	Input of litter (solid waste matter, including micro-sized litter)
	Input of anthropogenic sound (impulsive/ continuous)
	Input of anthropogenic sound (impulsive, continuous)
	Discharge of water — point sources (e.g. brine)

The section of the entry form dedicated to legal frameworks and governance was designed to collect structured information on the protection status and management context of each DS. It included fields to report on the conservation objectives of existing MPAs, as well as on the status of associated management plans and conservation measures.

To ensure consistency, DS partners were asked to classify the stage of establishment of the MPAs using the categories defined in the *MPA Guide* (Oregon State University et al., 2019) (see Table 15). Similarly, the level of protection was to be selected based on the definitions provided in Grorud-Colvert et al. (2021) (see Table 16). These established typologies were integrated into the form to guide DS partners in providing harmonised and comparable information.

Where management plans were in place, respondents were invited to share access to them. The form also included dedicated sections to collect information on MPA monitoring activities and on existing restoration practices, using source characteristics defined by Bocci et al. (2024).

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 5. *Type of impact, as defined in the guidelines (Part A). (Source typology : Bocci et al., 2024).*

Type of impact
Degraded ecosystems in eutrophicated coastal areas (e.g. coastal cities, river estuaries)
Degraded ecosystems in highly polluted coastal areas (e.g. ports, coastal industrial sites)
Degraded marine vegetation
Degraded benthic community (soft bottom habitats)
Degraded benthic community (hard bottom habitats)
Overexploited fish stock
Deterioration of nesting habitats for marine species
Deterioration of spawning and nursery habitats for marine specie
Other (to be specified)

A section of the entry form was dedicated to collecting information on co-management and participatory processes carried out or ongoing within each DS. In order to describe the stakeholder groups involved in the participatory processes, categories were adapted from the Quintuple Helix model (Carayannis et al., 2012) (see Table 6).
To characterise the type and intensity of stakeholder interaction, a typology ranging from low-level involvement ("Inform") to high-level engagement ("Co-management") was also provided to DS partners (see Table 7) in Part A.

Table 6. *Definition of stakeholder groups as defined in the guidelines (Part A), based on the helix models by Carayannis et al., 2012.*

Stakeholder groups	Definition	Sources definition
Public sector	All levels of government (national, regional, local), governmental development agencies and organisations, public sector policymakers	(Dvorski et al., 2023; Värmland County Administrative Board, 2019)
Private sector	For-profit and non-governmental businesses or associations, such as fisheries or trade organizations, tourism entities, private investor companies etc.	(Dvorski et al., 2023; Värmland County Administrative Board, 2019)
Academia	University or other research institution providing scientific knowledge	(Värmland County Administrative Board, 2019)
Civil Society	Non-Governmental Organizations and other non-profit community groups, formalised interest groups or initiatives, individual citizens	(Couvreur et al., 2024; Dvorski et al., 2023; Värmland County Administrative Board, 2019)
Nature's Immaterial Values	Spokesperson or representative of Nature's immaterial values in a socio-ecological context, such as nature as an entity with judicial rights	(Blomley & Walters, 2019; Carayannis et al., 2012; Macpherson et al., 2021; Pascual et al., 2023)

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 7. *Participation spectrum (typology of interactions) between the organising entity and interested parties for participatory processes related to MPAs, as defined in the guidelines (Part A). Adapted from IAP2 International Federation (2018), Couvreur et al., (2024); Dvorski et al., (2023), Hurlbert and Gupta (2015,2024).*

Interaction type	Form of interaction	Source Definition
Informative role	MPA provides information to assist interested parties in understanding the problem, alternatives, opportunities and/or solutions. The information can be provided in a predominantly "pull" or "push" approach.	(Couvreur et al., 2024; IAP2 International Federation, 2018)
Informative – pull/passive	Information is made available to interested parties, but the stakeholders must actively seek out this information	(Dvorski et al., 2023)
Informative – push/active	Information is tailored and targeted groups are reached by direct contact through e-mails, tailored newsletters, calls etc.	(Dvorski et al., 2023)
Consulting role	Interested parties are consulted by the MPA for their expertise, feedback or opinions. The consulted party has no guarantee that their interests are reflected in the outcome, nor do they carry a responsibility for the outcome.	(Couvreur et al., 2024; Dvorski et al., 2023; Hurlbert & Gupta, 2015, 2024; IAP2 International Federation, 2018)
Involving/collaborative role	The MPA involves interested parties by collaborating on solving issues or initiating processes in a way that considers the concerns and aspirations of the involved parties. Co-creative approaches are included in this category.	(Armitage et al., 2009; Blomley & Walters, 2019; Couvreur et al., 2024; Dvorski et al., 2023; Horta E Costa et al., 2022; Hurlbert & Gupta, 2015, 2024; IAP2 International Federation, 2018)
Co-management role	MPA management is shared with one or several interested parties. This is a horizontal rather than vertical process of decision-making emphasising shared power and shared responsibility. Variations of co-management are included in this category.	(Armitage et al., 2009; Blomley & Walters, 2019; Couvreur et al., 2024; Dvorski et al., 2023; Horta E Costa et al., 2022; Hurlbert & Gupta, 2015, 2024; IAP2 International Federation, 2018)

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

3.1.2 Data Inventory

The data inventory entry form was developed as an Excel table to collect lists of relevant datasets, data platforms, and data catalogues in use at the DSs by adapting the table used in MSP4BIO T2.1 for a similar purpose (Whatley L., 2023). The table was subsequently adapted based on feedback provided by project partners during BLUE CONNECT's kick-off meeting (30th September – 2nd October 2024), resulting in the columns listed in Table 8. The data inventory entry form was then distributed to the DSs, who provided lists of relevant datasets, data catalogues, and data platforms in use at the DS with the associated metadata. The lists from each DS were then compiled into one inventory of data which was analysed using the columns.

***Table 8**. Columns (i.e. metadata fields) in the data inventory entry form, as defined in the guideline (Part A).*

Column	Description
Demo Site	Demo Site where the data was collected
Dataset name	Name of dataset
Data Type	Broad-scale type of data: ecological; hydrodynamic; biogeochemical; socio-economic; spatial regulatory; other
Link/metadata page	Link to download the data and/or consult the metadata
Language	Language of the data and/or metadata
Subtype/Variables	More specific description of data subtype, variables, and/or dataset contents
Ownership	Owner of the data / platform
File format	File format of downloadable data
Accessibility	Accessibility of data: open access; to be requested
Access type	Means of accessing the data
Scale	Geographical scale of data coverage: Demo site (partial); Demo site (full); sea basin; European seas; other
Spatial coverage	A more specific textual description of the geographical coverage of the data
Spatial resolution	Spatial resolution for raster data only, including the unit
Temporal coverage	Temporal coverage of the data, with start date and end date where relevant
Temporal resolution	Temporal resolution of the data
Time series available?	Availability of a time series
Future scenario available?	Availability of future projections/predictions
Object type	Options: dataset/database; data platform/catalogue; tool; model
Notes	Additional information about the data, where relevant
Data platform	Platform hosting the data, where relevant

3.1.3 Best practices and barriers

The entry form included questions aimed at identifying the best practices and barriers related to key thematic areas of relevance to the project. These areas included: (1) MPA management and governance (including monitoring), (2) strict protection, (3) MPA

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

expansion and designation of new MPAs, (4) ecological connectivity, (5) active restoration, (6) stakeholder participation and (7) economic, societal, and cultural needs.

These seven themes were derived from the common challenges and needs preliminary identified in each DS and presented in the project's grant agreement.

Phase 2: Additional requests to complete baseline information and guidelines for interviews with the LSWG

3.2.1 Tool Inventory

Work Packages (WP) 2, 3, and 5 made a collective request to T4.1 to collect an inventory of ecological tools in use at each DS, in addition to and complementing the data inventory. These WPs developed an entry form table to collect this information from the DSs based on the data inventory collection table (Table 9). The tool inventory entry form was then distributed to the DSs, who provided lists of the tools in use at the DS with the associated metadata. The lists from each DS were then compiled into one inventory of tools which was analysed using the columns.

***Table 9**. Columns (i.e. metadata fields) in the tool inventory entry form.*

Column	Description
Name	The name of the framework, method, or tool as it appears in official documents, project deliverables, or technical publications.
Primary objective	The primary objective for using the approach in your Demo Site. Options: Informing and/or assessing conservation actions; Informing and/or assessing restoration actions.
Specific focus	The particular focus of the listed approach. Options: Ecosystem structure; Ecosystem functioning; Connectivity; Sensitivity, vulnerability, and adaptation; Pressures and impacts; Climate adaptation; Other.
Type	The nature of the approach. Options: Monitoring; Indicator; Model; Decision support tool/platform; Management evaluation tool; Conceptual framework/guideline; Other.
Implementation status	The current stage of adoption/use of the approach in your Demo Site. Options: Implemented; Planned; Considered.
Stage of application	The phase in which the approach was implemented or is expected to be implemented. Options: Design/planning; Implementation; Management; Assessment/evaluation; Multiple.
Input variables	Information on the data or parameters needed to feed the approach. Only relevant for indicators, models, decision support tool/platform.
Output variables	The results or outcomes generated by the approach. Only relevant for monitoring programs, indicators, models, decision support tool/platform.
Spatially explicit	Does the approach produce outputs that include a geographical/spatial component or are represented by maps? If not relevant select "NA".
Spatial coverage	Indicate the spatial extent of the outputs produced by the method. Only relevant for approaches producing spatially explicit outputs/results. Options: Local; Demo Site; Sub-basin; Sea basin; NA.
Spatial resolution	The resolution of spatially explicit outputs/results produced. Only relevant for approaches producing spatially explicit outputs/results.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Temporally explicit	Does the approach produce outputs that include a temporal component? If not relevant select "NA".
Temporal coverage	The time span covered by the outputs. Only relevant for approaches producing temporally explicit outputs/results.
Temporal resolution	The resolution of temporally explicit outputs/results produced by the approach. Only relevant for approaches producing temporally explicit outputs/results.
Data flow and integration	Description of whether the outputs generated are incorporated into national or international data repositories, or if the approach itself facilitates interoperability and integration with other methodologies, tools, or systems within broader platforms and frameworks.
Transferability	Description of if/how the approach can be universally applied, or if it is specifically tailored for its use in particular area/region, ecosystem, habitat or environmental setting.
Accessibility	How the approach can be accessed. Only relevant for models and decision support tools/platforms.
Challenges	Any challenges in using this approach or that prevent its implementation. Options: Legal; Time required for implementation; Availability of resources; User technical background and requirements; Accessibility; Other.
Beneficial / Useful	Whether the approach is beneficial/useful based on your experience. Options: Yes; No; Unsure.
Links to relevant information	Relevant web links to documents or webpages related to the approach.
Comment	Any required clarification requested in previous columns.

3.2.2 Interviews with LSWG

The interviews with the members of LSWG were designed with two main objectives:

A) The validation and completion of baseline information: to address potential gaps in the baseline information compiled in the DS entry forms.

B) Identification of local issues and needs: to gather information on local expectations, priorities, and challenges as perceived by stakeholders, in order to better understand the economic, societal, and cultural context of each DS.

The interviews were conducted using a flexible approach tailored to the preferences and availability of DS partners and LSWG members. Formats included one-on-one interviews conducted face-to-face, online, or by phone. In some cases, group interviews were organised in the form of workshops, or questions were sent via email to collect input in writing.

Drawing on the project proposal and the Task 4.1 description, the interview questions focused on seven key topics: 1) MPA management & governance, 2) strict protection, 3) MPA expansion & new MPAs, 4) connectivity, 5) active restoration, 6) participation and 7) economic, societal and cultural needs (see Table 22).

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Semi-structured qualitative interviews were conducted using guiding questions for each topic (see Annex 2), while also leaving room for interviewees to provide additional or unexpected insights.

Phase 3: Collection of local needs from the general public using consultations

A public survey (see Annex 1) was carried out in the DSs where initial interaction with the local community was needed. The objective was to collect citizens' views and input on the protection and restoration of their local marine area. The survey gathered information on public concerns, priorities, and how people value the marine environment, as well as their level of Ocean Literacy. This activity was conducted in collaboration with Tasks 3.3 and 3.3.2 and contributed to awareness-raising efforts under WP 7.

In addition, the survey served to identify local needs from the perspective of the broader community and general public, supporting the development of a bottom-up approach. By integrating citizen feedback into the analysis, the project aimed to ensure that proposed actions are better aligned with the specific context, concerns, and expectations of the local population. This process also helped to foster community engagement and ownership in future marine management and restoration activities.

The survey was translated into the national language of each DS, where necessary. An online version of the survey, compliant with the General Data Protection Regulation (GDPR), was developed using Google Forms and validated by all DS partners. In addition, partners had the option to create a physical (paper-based) version of the survey. Each DS partner was responsible for disseminating the survey and collecting responses.

Multiple distribution methods were used to maximize local community engagement, with a preference for combining different formats. Recommended approaches included:

1. Dissemination of the survey through each partner's network and social media channels, as well as through the networks of LSWG members.
2. Distribution at local events in the vicinity of the DS, particularly those attended by community members, using printed materials and QR codes to facilitate access to the online survey.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

4. Results

4.1 Desktop analysis – Compilation of a knowledge base

4.1.1 Introduction to the demonstration sites

The 12 DSs, distributed across four European sea basins as described in the *Introduction*, include site-specific local MPAs, parts of national MPAs and ecological networks, as well as regional networks of MPAs (see Figure 1). Together, they cover a wide range of ecosystem functions and services. An introduction to each DS is provided below, including reference to its Marine Province of the World, a biogeographic classification system that divides coastal and shelf areas into ecologically meaningful units. Marine Provinces are defined by "the presence of distinct biotas that have at least some cohesions over evolutionary time frames." (Spalding et al., 2007). As noted in the grant agreement, the Southern Adriatic Ionian Strait DS did not participate in Task 4.1.

A. Macaronesia

The Macaronesia DS consists of a collection of North Atlantic archipelagos, including the Azores, Madeira, Canary Islands, and Cape Verde (see Figure 2). All of these are part of Lusitanian Province, except for Cape Verde, which belongs to the West African Transition Province.

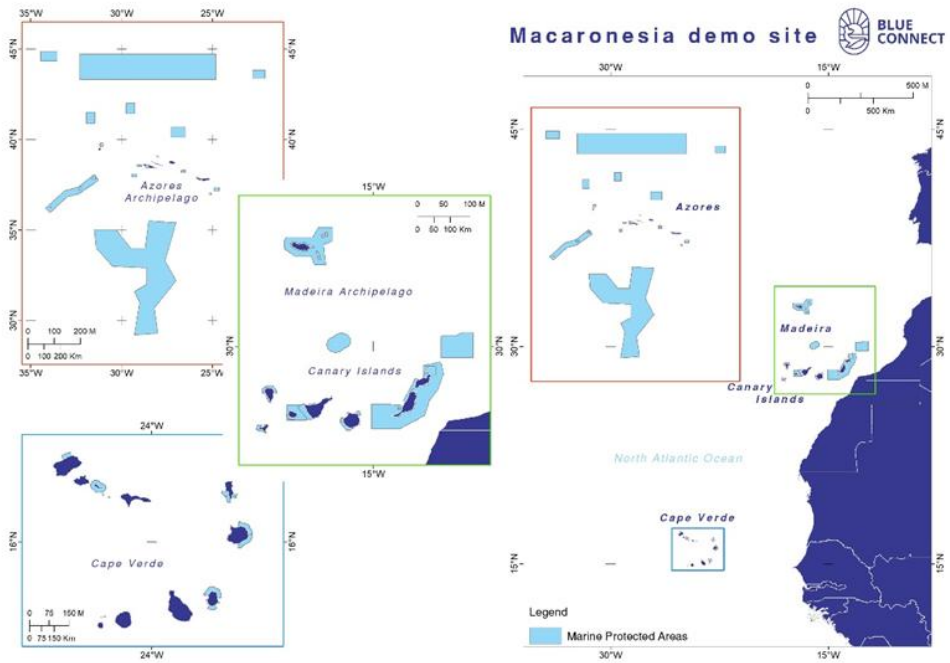


***Figure 2**. Location of the Macaronesia DS: Azores, Cape Verde, Canary Island and Madeira.*

Through the BLUE CONNECT project, the Macaronesia DS will showcase best practices in MPA management by promoting bottom-up strategies and strong local stakeholder engagement. Activities will include the co-creation of tailored action plans to improve

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

management of MPAs and marine resources. This will be achieved through bottom-up strategies involving local communities, government agencies, and conservation organizations organized into three dedicated Working Groups: connectivity, MPAs management, and co-management. Additionally, to enhance ecological connectivity across the archipelago, blue corridors will be identified using an integrated approach that combines ecological linkages, oceanographic processes, and maritime activity patterns. This comprehensive strategy will guide spatial planning and conservation initiatives, ensuring a more resilient and interconnected marine environment. The DS will also carry out capacity-building workshops to strengthen stakeholder knowledge and support long-term sustainable marine resource co-management.

B. Cabo Roche

The Cabo Roche DS is located in southern Spain, near the Strait of Gibraltar, and forms part of the Lusitanian Marine Province (see Figure 3).

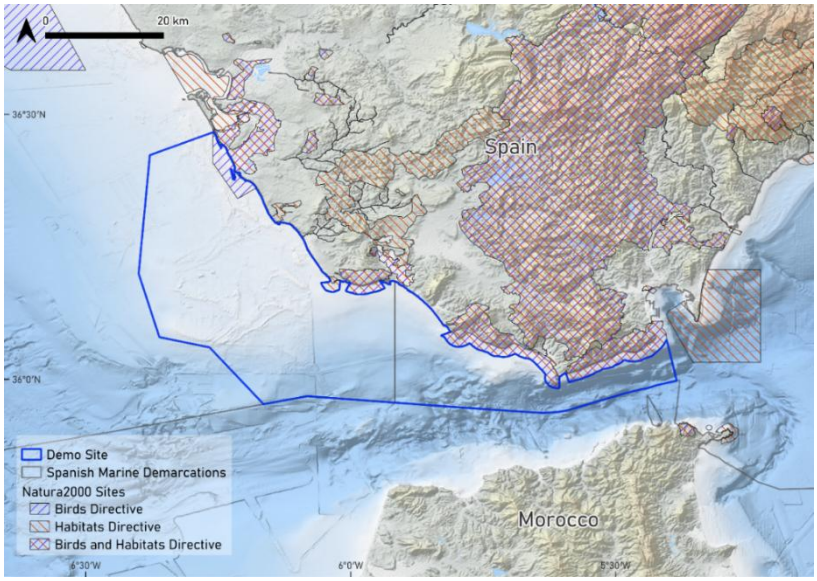


Figure 3. *Location of the Cabo Roche demonstration site.*

Within the framework of the BLUE CONNECT project, the DS aims to strengthen co-management schemes. The DS involves the existing working group of stakeholders and support the identification of areas for strict protection and designation of a new Marine Reserve of Fishing Interest through a participatory approach. Key activities include the development of a management plan and active restoration of degraded deep habitats.

C. Pitiusas Islands

The Pitiusas Islands DS is located in the southwestern part of the Balearic in the Mediterranean Sea Marine Province (see Figure 4). Through the BLUE CONNECT project, the DS aims to improve co-management schemes and enhance collaboration among stakeholders.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

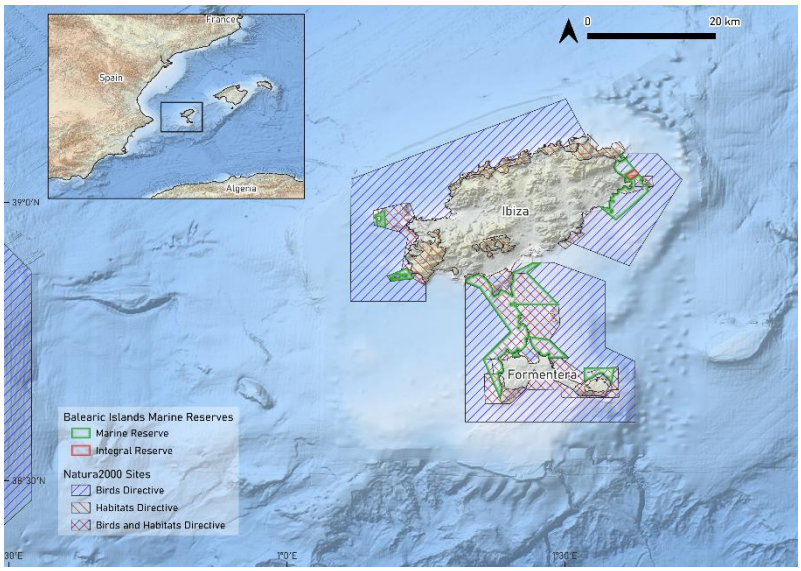


Figure 4. *Location of Pitiusas Islands demonstration site.*

The DS will identify areas for active restoration of deep-sea habitats and assess potential zones for strict protection, with the goal of expanding the Tagomago Fishing Reserve. Socio-economic monitoring of the reserve's effects will be included in the monitoring plan. In addition, mitigation measures will be developed for longline fisheries to reduce seabird by-catch, particularly of shearwaters.

D. Cetacean Migration Corridor

The Mediterranean Cetacean Migration Corridor DS is located within the Exclusive Economic Zone (EEZ) of Spain. This MPA covers 46,385 km^2 of marine areas and is 1,350 km long, located off the Spanish Mediterranean coast in the Mediterranean Sea Marine Province (see Figure 5).

The main objectives of the DS within the BLUE CONNECT project are to support the ongoing process with the MPA implementation and support science-based evaluation of conservation pressures, facilitating knowledge exchange and developing recommendations on monitoring and management effectiveness. The project also aims to strengthen links between the Pelagos Sanctuary and the newly designated Particularly Sensitive Sea Areas (PSSAs) in the region to enhance ecological connectivity of conservation objectives.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

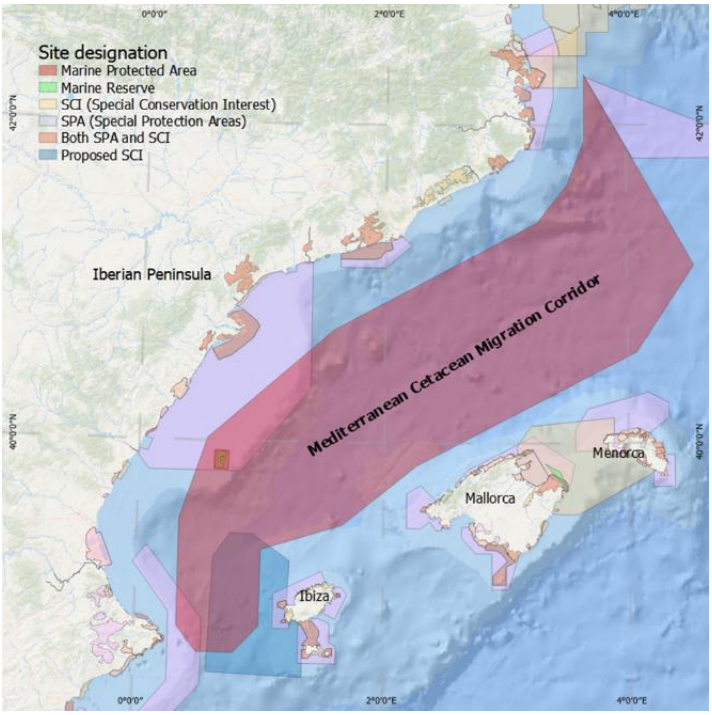


Figure 5. *Location of the Cetacean Migration Corridor demonstration site. Source: University of Malaga.*

E. L'Albera

L'Albera DS is located in the Mediterranean Sea Marine Province (see Figure 6), specifically in the northern section of the Costa Brava in Catalonia. It is a small MPA (5 Ha) that is part of a larger protected area, predominantly terrestrial that covers a total of 163,22 km². Thus, the Natura 2000 site of L'Albera has a very small portion of coastal area protected.

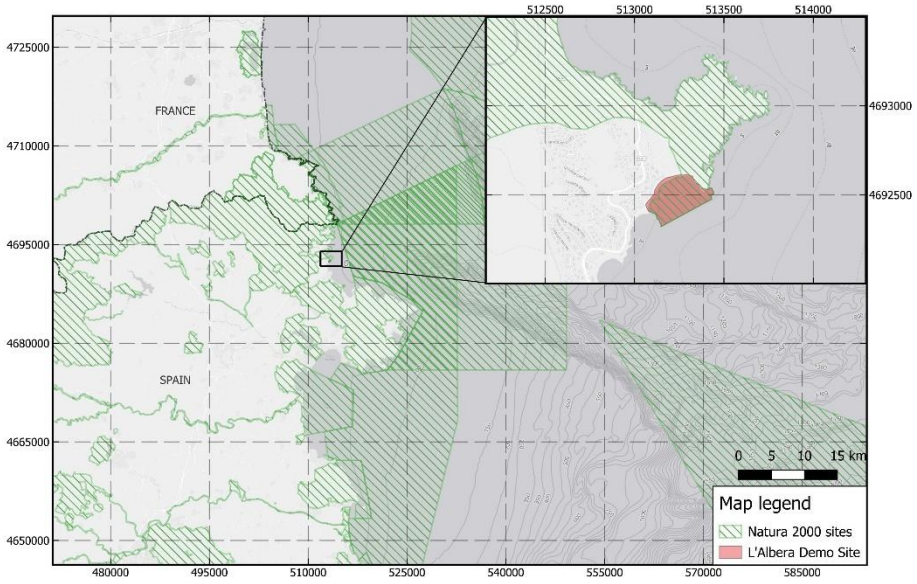


Figure 6. *Location of L'Albera demonstration site in the northern section of the Costa Brava, Catalonia.*

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

The main objectives of this DS within the BLUE CONNECT project are to strengthen stakeholder engagement in conservation, research, and outreach activities, and to assess the effectiveness of active restoration efforts for *Posidonia oceanica*. It also aims to support the management and protection of the MPA, as well as its possible expansion.

F. Italian Northern Adriatic

The Italian Northern Adriatic DS is in the Northern Adriatic Sea, part of the Mediterranean Sea Marine Province, and cover approximately 24 km² (see Figure 7).

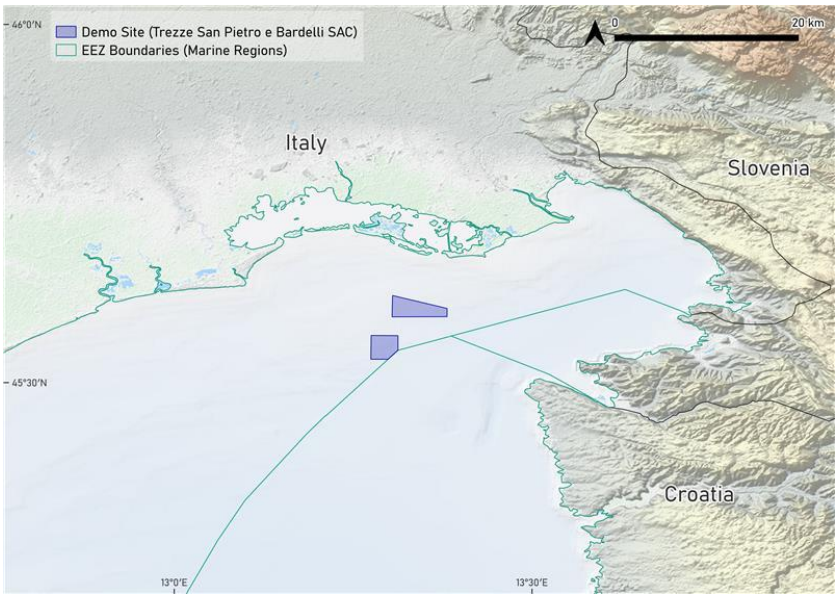


***Figure 7**. Location of the Italian Northern Adriatic demonstration site: Natura 2000 site 'Trezze San Pietro e Bardelli'.*

Through the BLUE CONNECT project, targeted actions will be implemented to strengthen the conservation measures of the Natura 2000 site *Trezze San Pietro e Bardelli*. The DS specifically aims to address critical knowledge gaps, particularly in relation to anthropogenic activities within the site and their impacts on ecologically important habitats. Key stakeholders operating in the area have been actively involved to raise awareness of their potential impacts and to encourage the adoption of best practices for more sustainable use of the site. In parallel, managing authorities of other marine Natura 2000 sites in the Friuli-Venezia Giulia region will be engaged to facilitate the exchange of methodologies and to explore opportunities for regional replication and upscaling

G. Burgas Bay

Burgas Bay DS is located along the south Bulgarian Black Sea coast in largest Bay of Bulgaria and includes onshore and marine part (see Figure 8). The DS is part of the Black Sea Marine Province. The main objectives of the DS within the BLUE CONNECT project is to strengthen stakeholder engagement, suggest conservation objectives and measures, address ecological connectivity, Cumulative Impact Assessment (CEA), Land-Sea Interactions (LSI) and MPA integration in Maritime Spatial Planning (MSP).

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

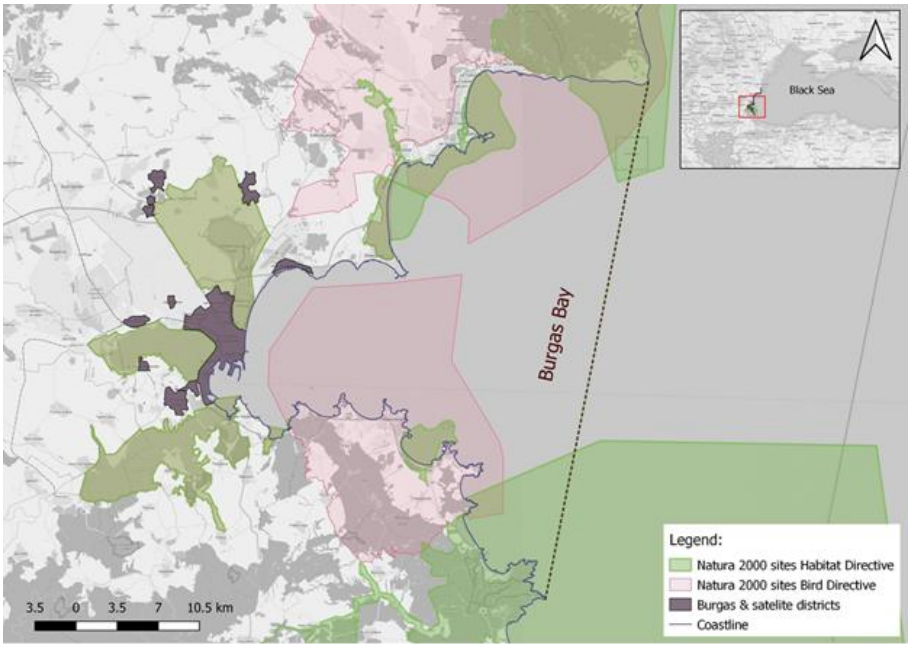


***Figure 8**. Location of Burgas Bay demonstration site.*

This is supported through the establishment of a LSWG aimed at fostering co-management and shared use of MPAs. In addition, the DS seeks to identify the possible blue corridor within MPAs and apply BLUE CONNECT tools/model to enhance ecological connectivity.

H. Central Romanian Coast

The Central Romanian Coast DS is located along the central Romanian Black Sea coast, between Midia Cape and Aurora Cape (see Figure 9) and is part of the Black Sea Marine Province.

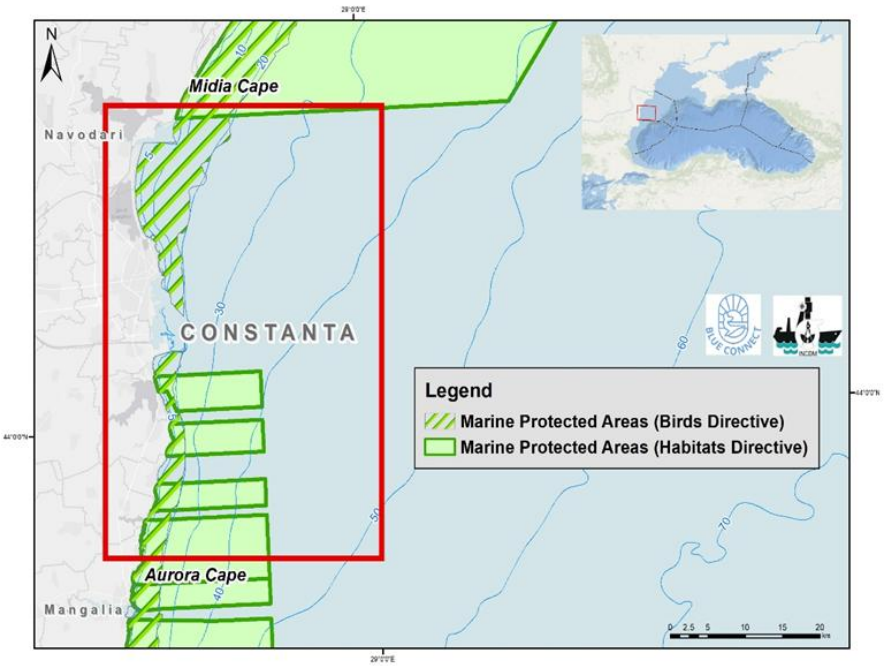


***Figure 9**. Location of Central Romanian Coast demonstration site.*

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Within the BLUE CONNECT project, the DS will support development of science-based conservation measures, enhancing knowledge on LSI, addressing gaps on key habitats, and strengthening monitoring capacity. Key activities include stakeholder engagement in co-management, pressure analysis, and the use of spatial tools and ecosystem models to define conservation objectives. The DS will also pilot innovative monitoring techniques to evaluate MPA effectiveness and contribute to a shift towards stricter protection measures.

I. Raet National Park

The Raet National Park DS is located in Norwegian part of the Skagerrak and within the Raet National Park (see Figure 10). The Park covers 599 km^2 in marine zone and 8 km^2 in terrestrial zone. It is located at the easternmost end of a chain of 4 disconnected Marine National Parks in Norway. The DS is part of the Northern European Seas Marine Province.

Through the BLUE CONNECT project, the DS will address governance barriers to effective marine conservation, while advancing science-based approaches.

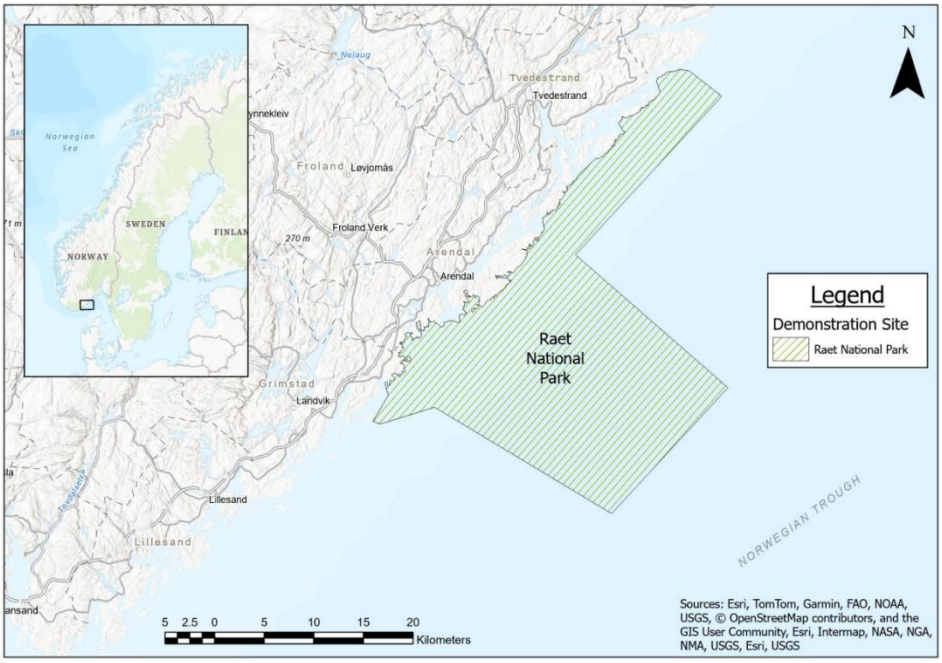


Figure 10. *Location of Raet Marine National Park demonstration site and nearby natural conservation areas.*

The DS will analyse the challenges posed by the current legislative framework and promote a bottom-up, inclusive governance model. Social science activities will identify barriers and enablers to fair and effective management, focusing on conflicts, value integration, and ocean literacy. In parallel, natural science work will compile data, model LSI, and monitor vulnerable habitats using field research, drones, and GIS tools. The site will also contribute to raising awareness and engaging citizens in both research and governance processes.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

J. Vlaamse Banken MPA: Hinder Banks

The Vlaamse Banken MPA: Hinder Banks DS, also called Vlaamse Banken, is situated in Belgium within the Northern European Seas Marine Province (see Figure 11). Covering an area of 1,099.39 km², it extends approximately 45 km offshore, encompassing both territorial waters and part of the EEZ.

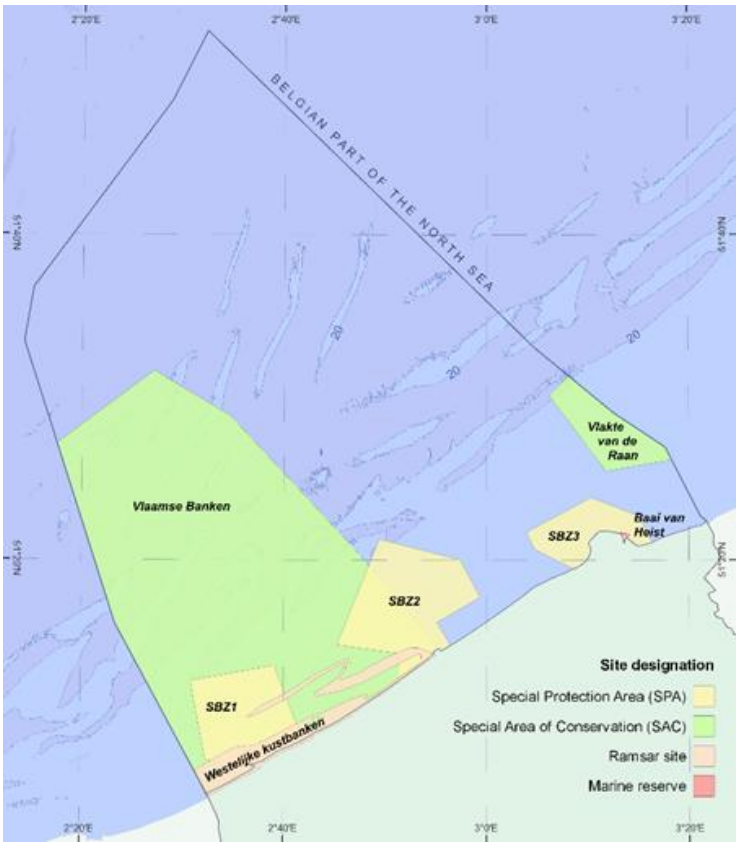


***Figure 11**. Location of the Vlaamse Banken MPA: Hinder Banks demonstration site in the southwestern part of the Belgian part of the North Sea.*

Through the BLUE CONNECT project, this DS will carry out a pilot for active restoration of European flat oyster (*Ostrea edulis)* reefs with sustainable materials, combined with improved stakeholder and citizen engagement in the MPA designation and governance. Activities include site selection, oyster handling and installation at sea (substrate deployment), as well as monitoring and pressure analysis. Local working groups will be established to co-develop conservation objectives and promote community ownership through interactive engagement and awareness-raising.

K. Scottish MPA Network

The Scottish MPA Network DS is located in the Northern European Seas Marine Province (see Figure 12). The focus of the DS is on the important marine mammal areas (IMMA) and MPAs within the Scottish MPA Network that have been identified or designated to protect cetaceans and/or seals.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

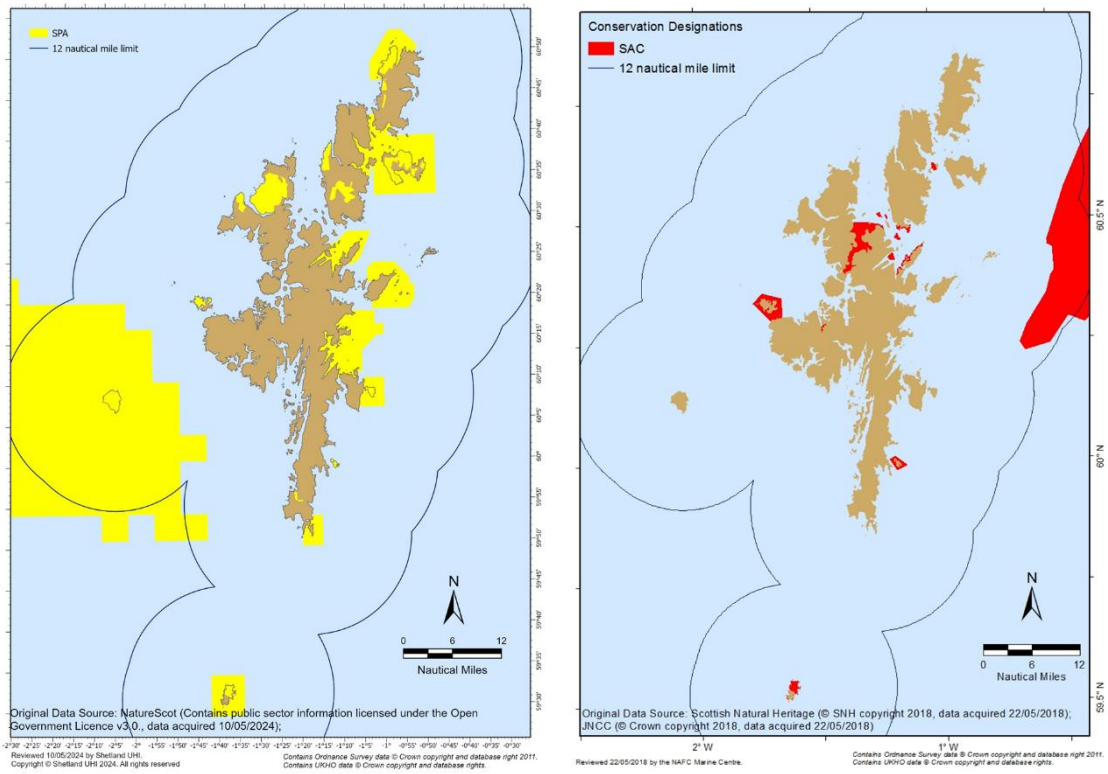


Figure 12. *Location of the MPAs around Shetland (within the Scottish MPA Network): yellow represent the Special Protection Areas (SPA) and red represent Special Area of Conservation (SAC).*

Trough the BLUE CONNECT project, the DS will aim to address key challenges related to the monitoring and management of remote MPAs, in part by trialling innovative, cost-effective data collection methods, including using robotics in, collaboration with local communities. The DS will demonstrate community engagement in environmental monitoring and pressure management, using MPAs and MSP as tools to manage these pressures. Activities include stakeholder engagement and the implementation of co-management practices. While the primary focus of the DS is on the Shetland and Fair Isle IMMA, the lessons learned will be transferable and shared across the wider Scottish MPA Network, with the aim of strengthening marine mammal monitoring and conservation efforts throughout the network.

4.1.2 Environmental socio-economic information

The DSs span a wide array of ecological regions, each with distinct species and habitat characteristics that justify targeted conservation efforts. While each site supports a diversity of taxa, certain species groups and habitat types emerge as particularly significant based on their ecological function, conservation value, or regional uniqueness.

Marine mammals are a priority in several DSs, including the Cetacean Migration Corridor (Izquierdo-Serrano et al., 2022), Italian Northern Adriatic, Central Romanian Coast, Burgas Bay, Scottish MPA Network, and Macaronesia (Herrera et al., 2021). The Cetacean

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Migration Corridor plays a crucial role in linking feeding and breeding habitats, particularly serving as a key migratory route for fin whales. Burgas Bay provides key feeding and migration areas for the Bottlenose Dolphins, Harbour Porpoises and Common Dolphins.

Seagrass meadows are high value habitat in L'Albera, Burgas Bay, Central Romanian Coast, and the Pitiusas Islands DSs. For example, L'Albera hosts extensive *Posidonia oceanica* meadows, along with a rare patch of *Zostera noltei*, forming a shallow, coastal corridor. These meadows not only support fish nurseries but also provide critical ecosystem services like carbon sequestration, particularly in Burgas Bay, where they also help filter land-based nutrient inputs.

Invertebrate taxonomic group are of high importance to Vlaamse Banken, Macaronesia, and Cabo Roche DSs. Vlaamse Banken DS, for instance, protects sandbanks and natural gravel beds, including *Lanice conchilega* aggregations, which form essential habitats for benthic communities (Van Hoey et al., 2008). In Cabo Roche, the mix of Atlantic and Mediterranean influences near the Strait of Gibraltar creates a mosaic of benthic habitats that support a rich diversity of marine invertebrates, an ecological wealth that underpins active local fisheries.

Reefs are an important habitat in the Italian Northern Adriatic, Cabo Roche, and Macaronesia DSs. The Macaronesia DS, due to its wide geographical coverage, encompasses a broad range of habitats of high conservation interest. These include, among others, hydrothermal vents (Gonzàlez et al., 2020), seamounts (Klügel et al., 2020), and deep-sea ecosystems. A detailed overview of the habitats and taxonomic groups of conservation interest for each DS is provided in Annex 3.

Beyond their ecological importance, these DSs are also shaped by a range of human uses and socio-economic activities, which influence both conservation priorities and management approaches. For most of DSs, extraction of living resources, particularly fishing, emerges from the desktop analysis as the most prominent human activity (see Figure 13). Transport and tourism and leisure also show high levels of occurrence across multiple DSs, indicating their central role in marine space use. In contrast, security/defence activities and extraction of non-living resources show the lowest overall presence, suggesting their relevance is more site-specific.

Several DSs, including Macaronesia, Burgas Bay, the Scottish MPA Network, Raet National Park, Central Romanian Coast, Pitiusas Islands, Cabo Roche and Vlaamse Banken, are characterized by a high density of overlapping activities, reflecting a complex and multi-use spatial dynamic.

In contrast, other DSs are predominantly affected by more specific pressures. For example, in the Cetacean Migration Corridor, marine mammals are mostly impacted by boat collisions, bycatch, and underwater noise resulting from heavy maritime traffic. Similarly, in the Italian Northern Adriatic DS, maritime transport is a dominant activity, as the area lies along a major shipping corridor. In addition, fisheries and anchoring exert

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

further pressure on this DS. At L'Albera DS, anchoring and tourism are the main sources of disturbance. Both the Pitiusas Islands and L'Albera DS experience heightened environmental stress during the summer months due to a sharp increase in tourism-related activities.

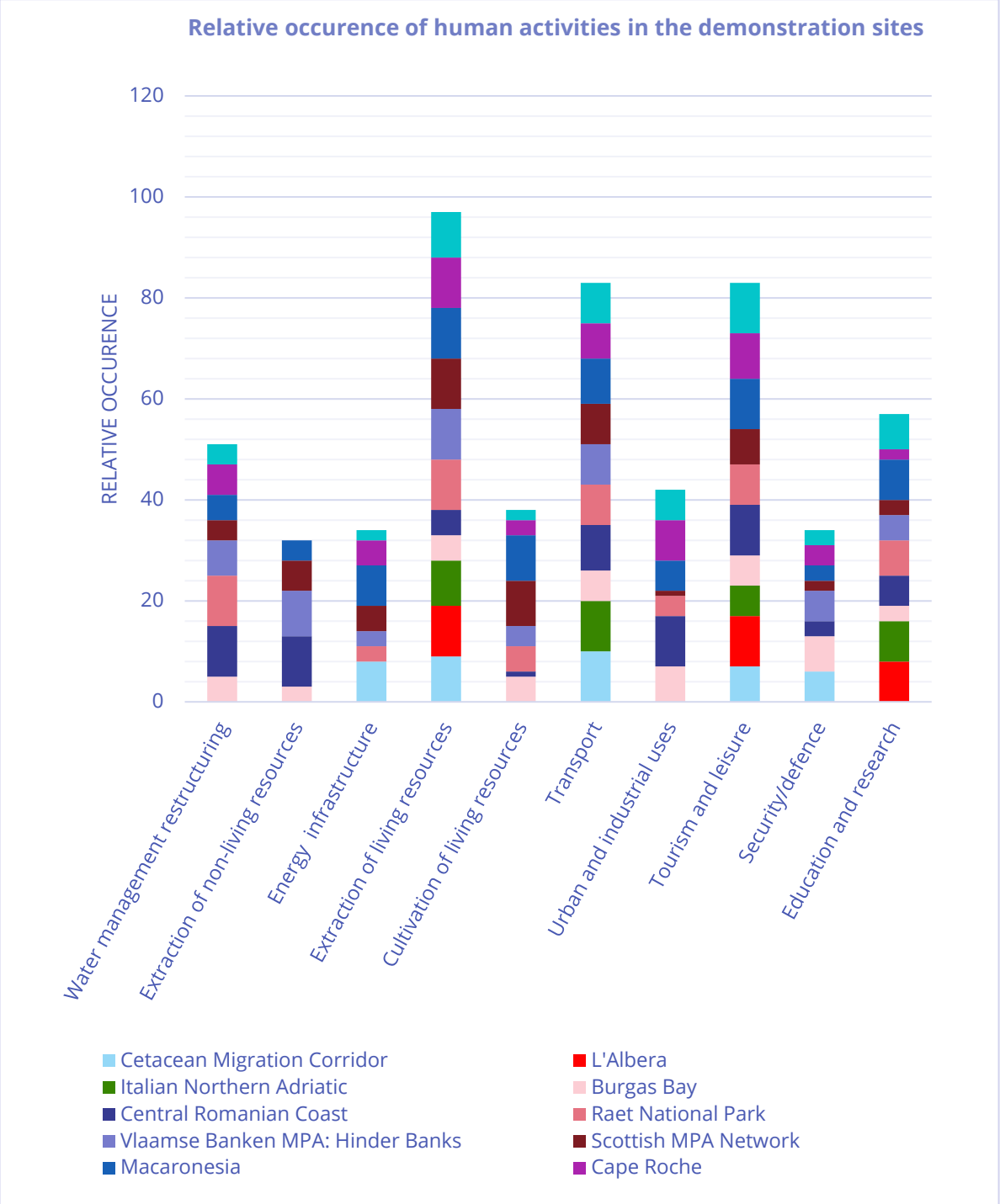


***Figure 13**. Stacked bar chart showing the relative occurrence of various human activities across the demonstration sites.*

The degradation of benthic communities in hard- and/or soft-bottom habitats is a reported impact in nine DSs (see Table 10). Other widespread impacts include the

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

deterioration of spawning and nursery habitats, the degradation of marine vegetation, and the decline of ecosystems in eutrophicated coastal areas. Overexploitation of fish stocks is reported in Burgas Bay, Raet National Park, Vlaamse Banken, the Scottish MPA Network, Macaronesia, Pitiusas Islands, and Cabo Roche. In the Scottish MPA Network, this is particularly marked by the collapse of sandeel stocks (MacDonald et al., 2019). In the Cetacean Migration Corridor, reduced populations of marine mammals and turtles have been reported, attributed to both lethal and sublethal effects on individual organisms.

Table 10. *Overview of the types of ecological impacts observed in the demonstration sites.*

Type of impacts	Demonstration sites
Decline of marine populations (mammals and/or turtles)	● ●
Deterioration of spawning and nursery habitats	● ● ● ● ● ● ● ●
Degradation of benthic communities	● ● ● ● ● ● ● ● ●
Overexploitation of stocks	● ● ● ● ● ● ●
Degradation of ecosystems in eutrophicated coastal areas (e.g. coastal cities, river estuaries)	● ● ● ● ● ● ● ●
Degraded ecosystems in highly polluted coastal areas (e.g. ports, coastal industrial sites)	● ● ● ● ● ●
Degradation of marine vegetation	● ● ● ● ● ● ● ●

Legend		
● Cetacean Migration Corridor	● L'Albera	
● Burgas Bay	● Central Romanian Coast	● Italian Northern Adriatic
● Vlaamse Banken MPA: Hinder Banks	● Scottish MPA Network	● Raet National Park
● Pitiusas Islands	● Cabo Roche	● Macaronesia

The most frequently identified future changes and projections across the DSs include the impacts of climate change, such as rising sea water temperatures, sea level rise, and shifts in species distribution, as well as the development of offshore renewable energy infrastructure, which is expected to generate underwater noise and alter seabed habitats. Coastal and urban development, increasing marine litter, the expansion of aquaculture, and the spread of invasive species are also commonly anticipated.

These changes are projected to affect biodiversity, ecosystem functioning, and the cumulative pressure on marine and coastal environments. A detailed description of anthropological pressures, human activities and projections for each DS is available in Annex 3.

4.1.3 Legal framework and protection status

The DSs encompass various types of MPAs, established under different legislative frameworks (see Table 11) and providing varying levels of protection (see Figure 14). The protection levels follow the classification by Grorud-Colvert et *al.,* (2021), which distinguishes four categories: minimally protected, lightly protected, highly protected,

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

and fully protected (strict protection). This classification is based on the types and intensity of activities permitted within the MPA, and on how effectively these restrictions contribute to conservation goals.

The Cetacean Migration Corridor, L'Albera, Italian Northern Adriatic, Burgas Bay, Vlaamse Banken and Raet National Park DSs host MPAs classified as *minimally protected*, based on their conservation objectives and the extent to which extractive or other human activities are permitted. While these MPAs still offer certain conservation benefits, their regulatory frameworks allow for significant human uses. Central Romanian Coast, Cabo Roche, Pitiusas Islands and Scottish MPA Network DSs feature *lightly protected* MPAs, as they include some MPAs with moderate levels of extractive activities allowed within their conservation regulations, but some degree of biodiversity protection is integrated into site management. Macaronesia DS includes MPAs with a range of protection levels, from *moderate* to *fully protected*. In the most *fully protected* areas, extractive activities are highly restricted or entirely prohibited, and pressures are systematically minimized. Some MPAs are also classified as *fully protected in* Pitiusas Islands DS.

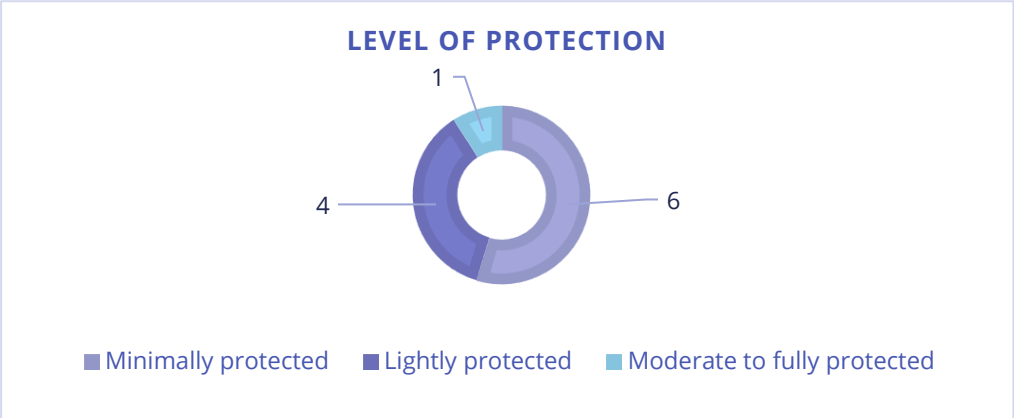


***Figure 14**. Distribution of demonstration sites by the level of protection of their respective MPAs.*

With the exception of Raet National Park and the Cetacean Migration Corridor DSs, all sites include MPAs designated under the EU Habitats and Birds Directives, as Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), respectively. In Cabo Roche DS, one MPA is currently designated as a Site of Community Importance (SCI) under the Habitats Directive, meaning it is recognised at the EU level but has not yet been formally designated under national legislation. In addition, certain areas within the DSs hold additional protected status under national legislation or international Conventions such as the Barcelona Convention, the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention), and the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention).

The stage of MPAs establishment also varies across the demonstration sites (see Figure 15). The different stages are defined by Oregon State University *et al.* (2019) and include: proposed, designated, implemented, and actively managed MPAs. The Scottish MPA Network includes a *non-statutory* MPA, where the intent to create a statutory MPA is subject to further investigation. In Cabo Roche demo site, the SCI is classified as a

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

proposed MPA. The Cetacean Migration Corridor, Italian Northern Adriatic, L'Albera, Burgas Bay, and Vlaamse Banken DSs host *designated* MPAs, which are legally recognized but not yet fully operational, existing only on paper or through a formal legal process. The Central Romanian Coast, Pitiusas Islands and Raet National Park feature *implemented* MPAs, which have moved beyond designation and are actively operational, with defined boundaries, conservation objectives and concomitant management in place that aims to ensure compliance and enforcement. Finally, Macaronesia demo site hosts some sites with *actively managed* MPAs, characterized by ongoing and enforceable rules, regular monitoring, evaluation, adaptive management practices, and demonstrable conservation outcomes. Pitiusas Islands DS also includes some MPAs classified as *actively managed*.

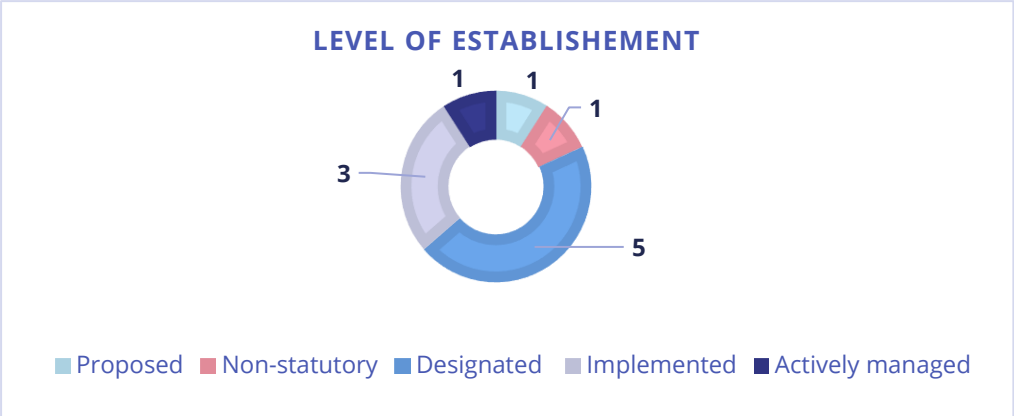


Figure 15. *Distribution of demonstration sites by the level of establishment of their respective MPAs.*

In addition to the legislative frameworks directly governing MPAs, other legal instruments play a critical role in shaping activities occurring beyond the boundaries of the DSs. These instruments can have a significant influence on the ecological effectiveness of MPAs by addressing external pressures such as pollution, habitat degradation, transport or fishery. For instance, all countries hosting the DSs, except Norway, have national MSP plans in place to regulate maritime activities. In Raet National Park, municipal spatial plans are in place to regulate activities within one nautical mile from land.

A detailed description of each DS, including its legal framework, number and type of MPAs, management body, and other relevant information, is provided in Annex 4.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 11. *Overview of the type of MPA, stage of establishment, levels of protection and protection framework of the demonstration sites. Level of protection and stages of establishment defined in MPA Guide (Grorud-Colvert et al., 2021). Marine Ecoregion of the World (MEOW) are defined in Spalding et al., 2007.*

Demo sites	MEOW	Type of MPA	Stage of establishment	Level of protection	Protection frameworks
Cetacean Migration Corridor	Western Mediterranean	Individual MPA	Designated	Minimally protected	National legislation Barcelona Convention (SPAMI)
L'Albera	Western Mediterranean	Individual MPA	Designated	Minimally protected	Habitats & Birds Directives (SPA & SAC)
Pitiusas Islands	Western Mediterranean	Large MPA Network	Implemented	Lightly to highly protected	Habitats & Birds Directives (SPA & SAC) National legislation
Cabo Roche	Saharan Upwelling	Individual MPA	Proposed	Lightly protected	Habitats Directives (SCI)
Italian Northern Adriatic	Adriatic Sea	Small MPA network	Implemented	Minimally protected	Habitats & Birds Directives (SPA & SAC)
Burgas Bay	Black Sea	Medium MPA network	Designated	Minimally protected	National legislation Habitats & Birds Directives (SPA & SAC)
Central Romanian Coast	Black Sea	Small MPA network	Implemented	Lightly protected	Habitats & Birds Directives (SPA & SAC)
Scottish MPA Network	North Sea	EBSA, MPA network	Non-statutory Designated	Lightly protected	Important Marine Mammal Areas (IMMAs) Habitats & Birds Directives (SPA & SAC)
Vlaamse Banken MPA: Hinder Banks	North Sea	Individual MPA	Designated	Minimally protected	Habitats & Birds Directives (SPA & SAC) Ramsar site
Raet National Park	North Sea	Individual MPA	Implemented	Minimally protected	National legislation
Macaronesia	Azores Canaries Madeira	EBSA (Azores)	Actively managed	Highly to fully protected	OSPAR Network Habitats & Birds Directives (SPA & SAC) National legislation
		EBSA (Madeira)	Actively managed	Moderate to highly protected	Habitats & Birds Directives (SPA & SAC) National legislation
		Individual MPA (Canary Islands)	Actively managed	Highly to fully protected	Habitats & Birds Directives (SPA & SAC) National legislation
	Cape Verde	Cape Verde	Designated	Lightly protected	National legislation

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Achieving effective conservation within the DSs presents several challenges. While each DS operates within a specific context, many faces common barriers that hinder progress (see Table 12). A widespread constraint identified across most DSs is the lack of adequate financial and human resources, which limits the capacity to implement, monitor, and enforce conservation measures effectively.

Table 12. *Overview of the barriers encountered in achieving effective conservation across the demonstration sites.*

Barriers	Demonstration sites
Weak legal framework in place with limited protection measures	●●●●
The conservation objectives are unspecific	●●●●
The protected site is affected by pressures occurring outside its borders	●●●●●●●●
Lack of knowledge about the site	●●●●●●●
Lack of human and financial resources	●●●●●●●●
The mandates and roles for those managing the demo site are missing or unclear	●●
Major economic interests and players in the area	●●●●●●
Conflicting legal framework	●●●●●
Strong cultural/traditional practices	●●

Legend		
• Cetacean Migration Corridor	• L'Albera	• Italian Northern Adriatic
• Burgas Bay	• Central Romanian Coast	• Raet National Park
• Vlaamse Banken MPA: Hinder Banks	• Scottish MPA Network	• Macaronesia
	• Cabo Roche	• Pitiusas Islands

Another frequently cited obstacle is the influence of external pressures that originate outside the boundaries of the DS but still significantly impact their ecosystems. These can include land-based pollution, maritime traffic, fisheries, climate change or invasive alien species and other marine uses. This highlights the critical importance of integrated MSP, which can help align conservation goals with other sectoral interests across the broader seascape. MSP enables a more coordinated approach to managing cumulative pressures, ensuring that activities occurring outside MPAs, yet within the same ecological or administrative region, do not undermine conservation objectives.

Additionally, DSs dealing with migratory species, such as the Cetacean Migration Corridor and the Scottish MPA Network, have pointed out that inadequate habitat coverage for such species, as well as the challenges associated with their mobility, are important barriers to effective conservation.

A lack of knowledge about the area has also been identified as important barrier. The lack of knowledge encompasses various aspects, including a deficiency in data about

species and ecosystems. Notably, some DS, such as the Raet National Park and Scottish MPA Network, have also highlighted the absence of information on ongoing pressures at the site and their cumulative effects. In the Macaronesia site, the gap in knowledge extend to ecological connectivity.

Seven demonstration sites, including L'Albera, Pitiusas Islands, Central Romanian Coast, Raet National Park, Vlaamse Banken, the Scottish MPA Network, and Macaronesia, have MPAs with management plans in place. For the Cetacean Migration Corridor, the management plan is in the final stages of approval, while at Raet National Park, an updated plan is awaiting approval from the Norwegian Environment Agency. In the case of L'Albera, the plan is more general in scope, applying to the broader Catalan region. It does not include site-specific conservation objectives and has yet to be implemented.

Three DSs, namely the Italian Northern Adriatic, Cabo Roche and Burgas Bay, do not yet have management plans in place. However, site-specific regulations to guide conservation actions have been implemented in Burgas Bay and a single management plan for all MPAs are under development.

As nearly all DSs include SPAs or SACs, conservation objectives are defined in line with the requirements of the EU Birds Directive (2009/147/EC) and the Habitats Directive (92/43/EEC). These objectives focus on maintaining or restoring the favourable conservation status of natural habitat types and species of Community interest, by ensuring the long-term viability of their populations and the ecological integrity of the designated areas.

In some DSs, MPAs are also designated under national legislation. This is the case for Raet National Park, Burgas Bay, the Pitiusas Islands, the Cetacean Migration Corridor, and Macaronesia. At Raet National Park, the site is divided into specially designated zones: Zone A prioritises the protection of seabird nesting areas, Zone B focuses on the conservation of vulnerable habitats, and Zone C functions as a scientific reference area. Each zone is governed by tailored conservation measures reflecting its specific ecological role.

In the Macaronesia DS, MPAs in Cape Verde are designated solely under national legislation, while those in Madeira, the Azores, and the Canary Islands benefit from both national and EU frameworks. Conservation objectives in these regions also acknowledge the cultural and aesthetic value of the marine environment.

Across the DSs, common conservation measures include restrictions on human activities that exert pressure on sensitive habitats and species. These typically involve limitations on trawling, mooring, and harvesting. In addition to these restrictions, several sites implement mitigation actions, such as the installation of eco-friendly mooring systems, deployment of artificial reefs to enhance biodiversity, and removal of marine litter, particularly plastics. Management of invasive alien species is also a widespread practice. Furthermore, strict regulations on pollution are enforced to maintain water quality and minimise environmental disturbance.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Voluntary management measures are sometimes implemented, as in the case of the Cetacean Migration Corridor. These include recommended measures deemed to be applied by any commercial ships and pleasure yachts from 300 gross tonnage and upwards. Among the measures it is included a recommended vessel speed reduction[1] to between 10 and 13 knots in areas where large or medium-sized cetaceans are detected or reported, as well as maintaining a safe distance from the animals. A detailed overview of the conservation objectives and measures for each DS is provided in Annex 4.

Most DSs currently lack dedicated funding for the management of MPAs within their boundaries. Five DSs, including Vlaamse Banken, Raet National Park, Cetacean Migration Corridor, Pitiusas Islands and Macaronesia reported having existing sources of funding. In the case of Vlaamse Banken, financial support is provided through the management body, with funding linked to the MSFD and the Habitats and Birds Directives. At Raet National Park, funds are allocated by the national Environmental Agency.

In the Pitiusas Islands, funding comes from a mix of public sources at regional and national levels, European Union funds, as well as grants from NGOs, foundations, private donations, and crowdfunding campaigns. Public-private partnerships with marinas, tourism operators, and the nautical sector also contribute. Additionally, an "eco-tax" charged to tourists visiting the Balearic Islands helps finance the preservation of natural heritage.

The Macaronesia DS stands out as the only site with a more advanced and diversified financing system. In the Azores and Madeira, like in most EU MS, compensation schemes are in place for fisheries, supported by the European Maritime and Fisheries Fund (EMFF). These schemes provide financial assistance for sustainable fishing practices and offer compensation during temporary closures aimed at stock recovery. Fishers have also diversified their income through tourism-related services such as guided tours, fishing excursions, and educational activities. These initiatives are supported by local governments and EU programs.

Additional funding in Macaronesia comes from EU programs (e.g. LIFE, Horizon Europe), national and regional government budgets, partnerships with NGOs and research institutions, and, in some cases, private stakeholders such as tourism operators or conservation organizations. Revenues generated from MPA-related activities, including guided tours and fishing permits, are typically managed by local or regional authorities and are often reinvested in conservation, enforcement, and public awareness. Despite these efforts, challenges persist in ensuring transparent, consistent, and well-structured revenue management.

4.1.4 MPA monitoring and evaluation

Monitoring and evaluation efforts vary considerably across the DSs (see Figure 15). Sites such as Cabo Roche, Burgas Bay, the Central Romanian Coast, L'Albera, and the

[1] Resolution MEPC.380(80)

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Italian Northern Adriatic report limited monitoring activities within their respective areas. In contrast, demonstration sites such as the Scottish MPA network, Macaronesia, and Raet National Park benefit from more established monitoring frameworks, utilising a broader range of techniques. It should be noted, however, that the data collected may not fully reflect the complete range of monitoring activities actually taking place. This may be due to variability in reporting practices, differences in the reporting time frames, or limited awareness among respondents of all techniques being implemented on-site. Despite these limitations, the data provides a useful indicative overview of the relative level of monitoring efforts across the DSs.

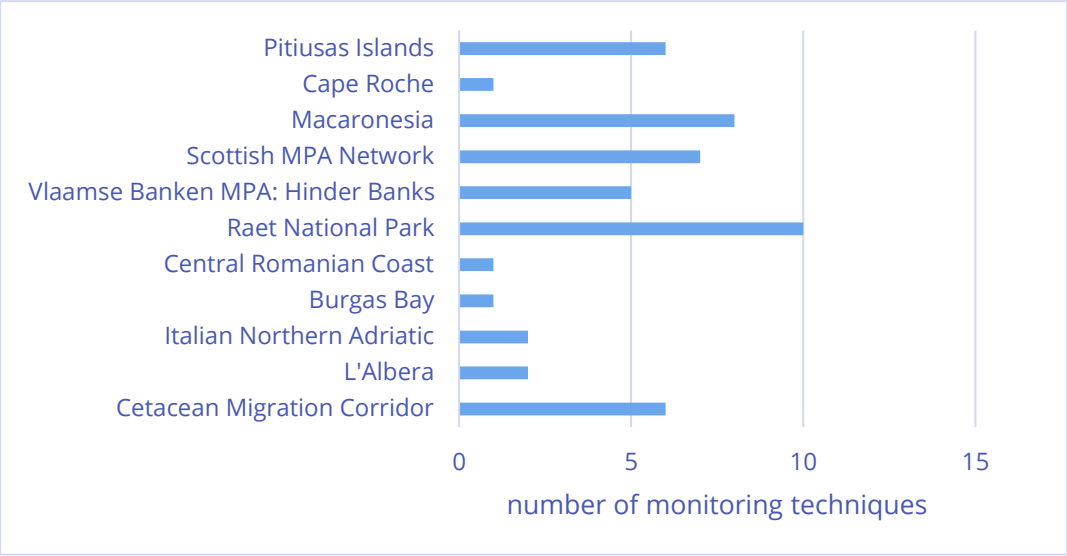


Figure 15. *Bar chart illustrating the number of monitoring techniques across the demonstration sites.*

Species and habitats are a key component monitored across the DSs (see Figure 16). Almost all sites carry out or planned to carry out regular monitoring to assess species richness, presence or absence, and changes in species assemblages. This work supports obligations under Article 11 of the Habitats Directive and Article 12 of the Birds Directive, which require periodic reporting on the conservation status of species and habitats listed in their annexes. A wide array of techniques is employed to collect this data in the DS, including underwater video imaging, physical sampling, aerial surveys, and underwater visual censuses.

Barriers

- In Cabo Roche, while innovative approaches such as participatory geo-tagging and citizen science have proven effective in collecting valuable data, the integration of these data streams into official EU and national monitoring frameworks remains limited.
- In Pitiusas Islands, changes in political priorities and complex bureaucracy delay or block the implementation of innovative monitoring techniques.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Specific monitoring efforts are in place to target key species and ecosystems across the DSs. For example, marine mammals are monitored at five DSs, the Cetacean Migration Corridor, Burgas Bay, the Scottish MPA Network, the Pitiusas Islands, and Macaronesia, using a combination of land-based and aerial surveys, as well as passive acoustic sensors that enable continuous tracking of cetacean activity. Seabird populations are monitored at sites such as Burgas Bay, the Pitiusas Islands, and Raet National Park. Species-specific monitoring is also conducted: lobster populations are surveyed in Raet National Park, oyster beds are monitored in Vlaamse Banken, and fish migration is monitored in L'Albera.
In addition to biodiversity monitoring, several DSs also assess environmental pressures, providing critical data to better understand and manage human impacts on marine ecosystems.

Plankton monitoring is also conducted in some DSs, providing crucial insight into ecosystem dynamics and health. Zooplankton is monitored in the area of the Cetacean Migration Corridor, while phytoplankton is monitored in Macaronesia, supporting a broader understanding of food web interactions and primary productivity.

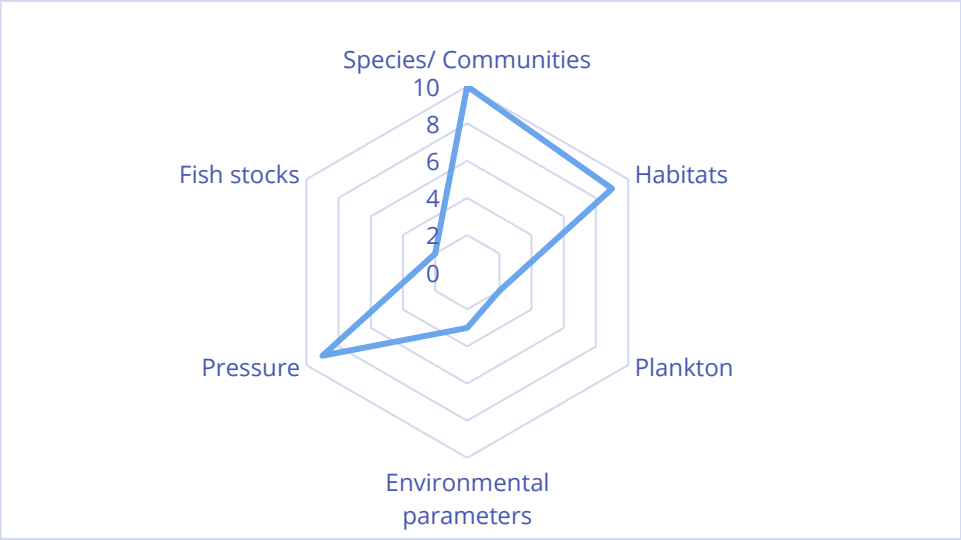


Figure 16. *Radar chart illustrating the number of demonstration sites per monitoring focus area.*

A number of DS, including the Scottish MPA Network, Central Romanian Coast, Pitiusas Islands, Vlaamse Banken and Macaronesia, are piloting innovative monitoring technologies. Examples of these advancements include the collection of environmental DNA from macro- and mega-fauna in Mediterranean monitoring programs covering the Cetacean Migration Corridor and the use of Autonomous Underwater Vehicles (AUVs) in Vlaamse Banken. A detailed overview of monitoring techniques used in each DS is available in the Annex 5.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Best practices

- In the Shetland Islands, several successful monitoring strategies are in place, demonstrating effective community engagement. A well-established, community-based marine mammal watching network has been developed.
- In Macaronesia, various monitoring and evaluation practices are implemented within the Azorean MPA network and the Madeira Marine Park. In Cape Verde, stakeholders and fishers are actively engaged, with long-term commitment from NGOs.
- In Raet National Park, national monitoring programmes represent a successful strategy. Standardised quality elements are monitored annually across the country. The ØKOKYST programme monitors water quality and biological indicators such as phytoplankton, soft-bottom fauna, and hard-bottom communities, with several stations located within the demonstration site.

4.1.5 Restoration measures

Macaronesia, L'Albera, Central Romanian Coast, Vlaamse Banken, Raet National Park, Italian Northern Adriatic, Cabo Roche, and Pitiusas Islands DSs have restoration initiatives either ongoing or under development, targeting various ecological objectives (see Table 13).

Barriers

- In Burgas Bay, a notable lack of practical knowledge and skills related to the restoration and management of seagrass habitats in the Bulgarian part of the Black Sea has been identified. This includes limited understanding of their specific ecological requirements, the threats they face, and the most effective restoration techniques.
- In Raet National Park, one of the barriers to restoration efforts could be various national regulations, for example the Aquaculture Act, which is not adapted to restoration efforts. Introduction of, planting, or cultivation of low-trophic species, or e.g eelgrass and algae, may pose a barrier to restoration efforts, as such activities could be classified as aquaculture.

Marine vegetation, primarily seagrasses, represents a key ecological target for the DSs like L'Albera, Central Romanian Site, Pitiusas Islands, and Macaronesia. Hard-bottom habitats and associated benthic communities also represent important priorities for restoration efforts.

Restoration projects are planned or under development in the Italian Northern Adriatic and Cabo Roche DSs. In the Italian site, the proposed project will focus on the restoration of *Pinna nobilis*. At Cabo Roche, pilot actions target the recovery of benthic

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

habitats (e.g. coral and gorgonian assemblages), the promotion of low-impact fishing practices, and the restoration of essential fish habitats. A comprehensive overview of the restoration measures for each demonstration site can be found in the Annex 5.

Table 13. *Overview of ecological targets for restorations measures across demonstration sites.*

Ecological targets	
Marine vegetation	●●●●●
Hard bottom habitats	●●●●
Oyster reef	●
Fish stocks	●●
Lobster stocks	●
Seabirds nesting habitat	●
Biodiversity	●●
Deep-sea floor	●

Legend		
• Cetacean Migration Corridor	• L'Albera	• Italian Northern Adriatic
• Burgas Bay	• Central Romanian Coast	• Raet National Park
• Vlaamse Banken MPA: Hinder Banks	• Scottish MPA Network	• Macaronesia
• Pitiusas Islands	• Cabo Roche	

Best practices

- In Macaronesia, the establishment of no-take zones and restrictions on allowed fishing gear to have contributed to the restoration of fish stocks.
- In Raet National Park, lobster protection zones have been established, regulating the use of fishing gear. These measures have led to an increase in lobster populations, as well as other species within the protected areas.
- In the Pitiusas Islands, the combination of science-based approaches and active stakeholder engagement is considered a successful model for the restoration of seagrass and macroalgae habitats.

4.1.6 MPA expansion and strict protection

Efforts to expand MPAs and implement strict protection measures have progressed across several DSs, with varying degrees of success and distinct challenges.

In the Macaronesia region, significant advancements have been achieved. In the Azores and Madeira, strict protection has been defined within the Azorean Marine Park and the Madeira Marine Park, including the establishment of highly protected marine reserves with substantial restrictions on human activities. The Blue Azores project, in particular, is widely regarded as a successful model that demonstrates the benefits of combining scientific research, stakeholder engagement, and political commitment. Key achievements include the expansion of the MPA network to cover ecologically important features such as seamounts and deep-sea ecosystems, the

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

designation of fully protected zones, and the implementation of sustainable use areas. Furthermore, a joint MPA management framework for transboundary marine ecosystems between the Azores and Madeira has been initiated, representing an important step toward integrated regional conservation.

In the Canary Islands, strict protection measures have been established within MPAs, all of which are part of the Natura 2000 network. While these efforts represent significant progress, their implementation has encountered several challenges, particularly the complexity of coordination across multiple governance levels and the need to balance conservation objectives with local economic activities, including fisheries and tourism. In Cape Verde, a network of MPAs including strict protection of important seabird breeding grounds and sea turtle nesting grounds is in place in the archipelago.

In the Burgas Bay DS, the expansion of MPAs and enforcement of strict protection has encountered resistance from local stakeholders. Negative perceptions among the population, coupled with limited institutional support, have hindered the designation of new zones and the adoption of stricter conservation measures. Additionally, economic stakeholders have expressed concern over potential restrictions that could impact their activities. In contrast, at L'Albera there is an increasing will from local community and public administrations to create a new Natural Park that would include a larger MPA, consisting in the whole coastline between the municipality of Llançà and the French border, including the area of the DS.

In Romania, the current MSP plan details the existing MPA network in both the plan's description and maps, highlighting its role as a key component of coastal and marine ecosystem protection strategies. The plan integrates biodiversity conservation principles to maintain marine ecological health, protect natural capital, and support sustainable economic development. It also refers to the objective of expanding protected areas to cover at least 30% of the marine space, including 10% under strict protection, in the next planning cycle. The designation of MPAs is carried out separately from the MSP process, under environmental legislation (Withouck et al., 2023); consequently, the current version of the plan does not designate or redefine specific marine space allocations for environmental protection.

In the Pitiusas Islands, strict protection within Fisheries Reserves has led to positive outcomes in biodiversity recovery and stakeholder engagement. However, implementation has faced key challenges, including social resistance from recreational fishers and difficulties in ensuring surveillance and compliance across large and complex marine areas. There are ongoing technical and participatory processes considering the expansion of existing Natura 2000 MPAs and the adjustment of boundaries to improve ecological connectivity, representativity, and management effectiveness. These proposals are under discussion with stakeholders and competent authorities. In both the Pitiusas Islands and Cabo Roche DSs, overlapping administrative competences, particularly between the Ministry for the Ecological Transition and the Demographic Challenge (MITECO) and the Ministry of

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Agriculture, Fisheries and Food, complicate the implementation of MPA expansion and strict protection measures.

In the Vlaamse Banken DS, an important obstacle to applying strict protection measures in MPAs relates to the limitations imposed by Article 11 of the Common Fisheries Policy (CFP), such as the requirement that conservation measures affecting fishing activities in MPA within the EEZ must be jointly agreed upon by all member states with a direct management interest in the area, and subsequently approved by the European Commission. This legislative constraint complicates efforts to align conservation objectives with fisheries management, thereby slowing progress in the establishment of more restrictive protection zones.

4.1.7 Ecological connectivity

Ecological connectivity is a conservation objective for Macaronesia, Cetacean Migration Corridor, and Scottish MPA Network DSs. In Pitiusas Islands, ecological connectivity is explicitly addressed in management plans for Natura 2000 sites and marine reserves. The concept of blue corridors is integrated into planning documents and technical studies, especially to connect coastal/onshore and offshore habitats.

Best practices

- In Macaronesia, particularly in the Azores, Cape Verde, and Madeira, ecological connectivity is promoted as a key component of conservation efforts. In the Azores and Madeira, it is integrated into the regional MPA networks and MSP strategies. Previous projected studied and planned transboundary cooperation among Azores, Madeira and Canary Island MSPs. These regions aim to maintain and enhance habitat continuity for migratory species such as tuna and cetaceans.

In the Canary Islands, part of the Macaronesia DS, ecological connectivity was not explicitly considered as a primary factor in the designation of MPAs, which were established mainly based on limited data for species such as the common bottlenose dolphin. Given the wide spatial distribution of cetaceans across the Canary Islands, Madeira, and the Azores, the establishment of a Macaronesia Biodiversity, Ecological, and Cetacean Migration Corridor has been proposed (Herrera et al., 2021). This initiative would require cross-border cooperation in marine spatial planning between Spain and Portugal. In Madeira, a key challenge to implementing an ecological corridor was the limited space available due to overlapping uses in coastal zones. In the Azores, the main difficulty is the coordination of stakeholders across a large and diverse archipelago. In Cape Verde, the primary constraint was the lack of human and financial resources for effective enforcement and monitoring.

Bulgaria has not yet established ecological corridors but plans progress in this area within the National Biodiversity Strategy (2022). Although national legislation does not explicitly define connectivity in the marine environment, various measures are in place to mitigate barriers and fragmentation caused by human activities. Notably, the

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

mouths of all major rivers along the Bulgarian Black Sea coast are included in Natura 2000 protected areas. This supports ecological connectivity between freshwater basins and the marine environment, which is essential for the conservation of migratory species (Withouck et al., 2023).

Ecological connectivity is also considered to some extent at the L'Albera and in Raet National Park DS. In Raet, the "Bevar Raet" project is exploring the potential for developing ecological corridors and a coherent MPA network.

Barriers

- In Burgas Bay, a significant challenge to achieving ecological connectivity lies in the presence of several major economic activities, including port operations, shipping, fisheries, aquaculture, and the oil industry, which overlap with the MPAs.
- In the Vlaamse Banken DS, connectivity for oyster reefs is hindered by the lack of undisturbed substrate suitable for settlement of larvae.

4.1.8 Participation-related information

Three DSs are currently progressing towards co-management arrangements. In Raet National Park, a Board was established with the mandate to receive and decide on applications, handle complaints, prepare thematic management plans, and implement conservation and restoration measures to safeguard ecological values. The board is also responsible for developing access points and organising visitor activities. Funding is provided by the Norwegian Environment Agency and is allocated across three main categories: board operations, measures within the protected area, and the organisation of visitor activities. Board members include public sector representatives such as municipal and county mayors, as well as private sector representatives, including major landowners. However, some stakeholders are currently not represented, including actors from commercial sectors beyond fisheries (e.g. tourism, cargo/shipping, renewable energy, and aquaculture), as well as representatives of younger generations and those advocating for intangible cultural or natural values.

Enablers

- In Raet National Park, an enabling factor was the high level of involvement and participation from local stakeholders across multiple levels, including those with decision-making power.
- In the Pitiusas Islands, knowledge sharing, co-responsibility, and conflict resolution are key enablers of the collaborative governance framework established in the area.

In Macaronesia, co-management initiatives have been undertaken in both the Azores and Madeira. These efforts focused on fisheries conservation management within two different MPAs. Stakeholders involved was researchers, fishers, public

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

administrations responsible for sea affairs and fisheries, and maritime tourism enterprises. Their roles were primarily consultative. In the Azores, collaborative approaches have fostered local ownership and trust in conservation measures, although they have not necessarily led to greater acceptance of stricter regulations. In Cape Verde, co-management is not yet embedded in the legal framework, and decision-making generally follows a top-down approach. However, local initiatives have fostered small-scale fisheries co-management schemes and collaboration with local NGOs on biodiversity monitoring protocols.

Barriers

- In Raet National Park, one of the key barriers to effective co-management is the conflict of interest between commercial development and conservation goals. Additional challenges include limited political will, scientific uncertainty, and concerns about the socio-economic impacts of strict protection measures.
- In Macaronesia, a key barrier to broader stakeholder participation is related to logistical and communication challenges, such as the geographical distance between islands, as well as occasional lack of resources to support stakeholder engagement.

In the Pitiusas Islands, a co-management process is being developed through the Formentera Marine Stewardship Board, encompassing all marine Natura 2000 sites and other MPAs around Formentera and Ibiza. The initiative aims to improve governance, protect biodiversity, support the local economy, and enhance coordination among relevant actors. This governance model is grounded in strong stakeholder collaboration and effective knowledge exchange among fishers, scientists, NGOs, and institutions. It has already led to the co-development of actions supporting ecological transition.

Furthermore, several participatory processes have taken place or are ongoing across the DSs (see Table 14). In the Vlaamse Banken, participation is mainly driven by legal requirements for public consultation related to the implementation of EU directives. In L'Albera, Raet National Park, Cabo Roche, Pitiusas Islands and Macaronesia, the participatory processes are more informal and have been implemented to involve stakeholders and enhance collaboration.

In the Cetacean Migration Corridor, a MPA Management Plan Development Consultation Group was established to identify the needs and solutions to be incorporated into the management plan. The aim is to ensure that activities within the area are compatible with the conservation objectives. The setup includes a broad range of stakeholders: the public sector, such as MITECO, other ministries, and foundations, alongside representatives from the private sector (including maritime transport companies, ferry operators, and fisher groups), academia, and civil society. One enabling factor for this was the existence of legal requirements mandating stakeholder involvement, which facilitated the active participation of relevant actors in the development of conservation measures. In Scottish MPA Network, the

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

participatory process described for the Shetland Islands Regional Marine Plan was under the setup of an advisory group.

Table 14. *Overview of examples of the participatory processes in place in the demonstration sites*

Demonstration site	Type of participatory processes	Aim of the setup or processes
L'Albera	Informal group	Steering bottom-up approach for management and conservation
Burgas Bay	Public consultation MPAs designation MSP plan	Public discussions are held on the draft orders for the declaration of MPAs, along with discussions on the procedures for elaborating management plans for protected areas. These also include assessing the compatibility of plans, programs, projects, and investment proposals with the goals and objectives of protecting MPAs. Collect stakeholder feedback on the draft MSP Plan in 2021.
Vlaamse Banken MPA: Hinder Banks	Public consultation MSFD	Collect opinions and advice about the draft update of the socio-economic analysis of the users of the sea space, the evaluation of the environmental status, the definition of 'Good Environmental Status' and the environmental goals for the Belgian Part of the North Sea (BPNS).
Vlaamse Banken MPA: Hinder Banks	Public consultation MSP	Collect opinions and advise on the draft of the update of the BPNS MSP 2026-2034.
Vlaamse Banken MPA: Hinder Banks	Public consultation Natura 2000	Collect advise and opinions on the draft update of the evaluation of the conservation objectives and assessment of the status of the BPNS.
Vlaamse Banken MPA: Hinder Banks	Co-creation trajectory on Prioritized Action Framework	To determine priority measures for Natura 2000 management and couple them to European funding sources
Vlaamse Banken MPA: Hinder Banks	Fishery Management Measures	Article 11 common fishery policy procedure to assign zones with fishery measures
Vlaamse Banken MPA: Hinder Banks	Public consultation Measures Program BPNS 2022-2027	Collect advise and opinions on the draft measures program of the BPNS
Vlaamse Banken MPA: Hinder Banks	Public consultation on Monitoring program BPNS	Collect advise and opinions on the draft update of the monitoring program of the BPNS
Vlaamse Banken MPA: Hinder Banks	Public consultation on Management program Natura 2000 2022-2027	Collect advise and opinions on the draft management plans of the Natura 2000 areas in the BPNS
Scottish MPA Network	Involvement of stakeholders	Manage Shetland's marine space via Shetland Island's regional marine plan
Raet National Park	Informal group	Collaboration to ensure conservation and sustainable use of marine life within Agder's marine national park, Raet National Park

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Macaronesia	Public consultation & meetings	To establish the largest marine protected area network in the North Atlantic, with full and highly protected zones
Italian Northern Adriatic	Involvement of key stakeholders	Decide and plan actions needed to improve the conservation measures in place in the Natura 2000 site site 'Trezze S. Pietro e Bardelli'
Cetacean Migration Corridor	Involvement of stakeholders – Public consultation	Preparation of Management plan Public consultation for Management Plan
Cabo Roche	Working Group	Established in 2012 to collaborate on the Marine Reserve of the Fishing Interest
Cabo Roche	Working Group	A cross border working group, established in 2018, with Marocco to collaborate on MPA and sustainable management of fisheries.
Cabo Roche	Working Group	Established in 2012 to involve stakeholders in defining management plan and governance model of SCI Westen Gibraltar
Pitiusas Islands	Public consultation, working group, involvement of stakeholders	To develop and approve management plans for marine Natura 2000 sites and other MPAs through active stakeholder involvement
Pitiusas Islands	Informal group, public consultation, working group, involvement of stakeholders	To set environmental priorities and co-design innovative actions for biodiversity, marine environment, and sustainability
Pitiusas Islands	Informal group, public consultation, working group, involvement of stakeholders	To improve the effectiveness and impact of existing MPAs, share knowledge, and identify solutions
Pitiusas Islands	Informal group, public consultation, working group, involvement of stakeholders	To facilitate local engagement in the design and implementation of biosecurity and restoration protocols

In L'Albera, Cabo Roche, Pitiusas Islands and Raet National Park DSs, the aim of the participatory processes is also to enhance the management of the area and ensure conservation. In L'Albera specifically, the participatory process also takes the form of a bottom-up initiative to establish a new Natural Park that would include a larger MPA. In Macaronesia, consultations, workshops, and public meetings were organised to support the establishment of an MPA network in the North Atlantic.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Barriers

- In the Macaronesia demonstration site, the lack of understanding among fishers and local communities about the long-term benefits of sustainable practices hinders effective stakeholder involvement.
- In Raet National Park, a key barrier to the participatory process is the absence of formal decision-making power, which limits its influence on conservation and management measures.
- In the Cetacean Migration Corridor, one of the main challenges lies in balancing the interests and inputs of various sectors, including those of major economic stakeholders.

4.1.9 Existing tool inventory

A total of 102 entries in the tool inventory from eight DSs had been collected at the time of writing (May 2025). The tool inventory will also be maintained as a living document and serve as a resource and reference for other tasks. The number of entries provided varied by DS from 21 (Cetacean Migration Corridor) to 5 (Burgas Bay and Scottish MPA Network) (see Figure 17). Annex 7 provides a numerical overview of the tool inventory.

The tool inventory contains a variety of types of objects with some variation between the DSs (see Figure 17). The most common types were models (31 entries, 30% of the inventory) and monitoring programmes (26 entries, 25% of the inventory). The primary objective of 39 of the entries (38%) was to inform or assess conservation objectives, while 7 entries (7%) were for informing or assessing restoration objectives and 52 (51%) were relevant for both conservation and restoration. The tools focusing exclusively on restoration were provided by the Vlaamse Banken and L'Albera DSs.

The accessibility of 54 entries (53%) was either not relevant or unknown; partners wishing to use these tools should contact the relevant DS for more information. Of the remainder, most (42 entries, 41% of the inventory) were open access. A majority (57%) of the entries had already been implemented at the DS, and a majority (70%) were spatially explicit. More entries were temporally explicit than non-temporally explicit.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

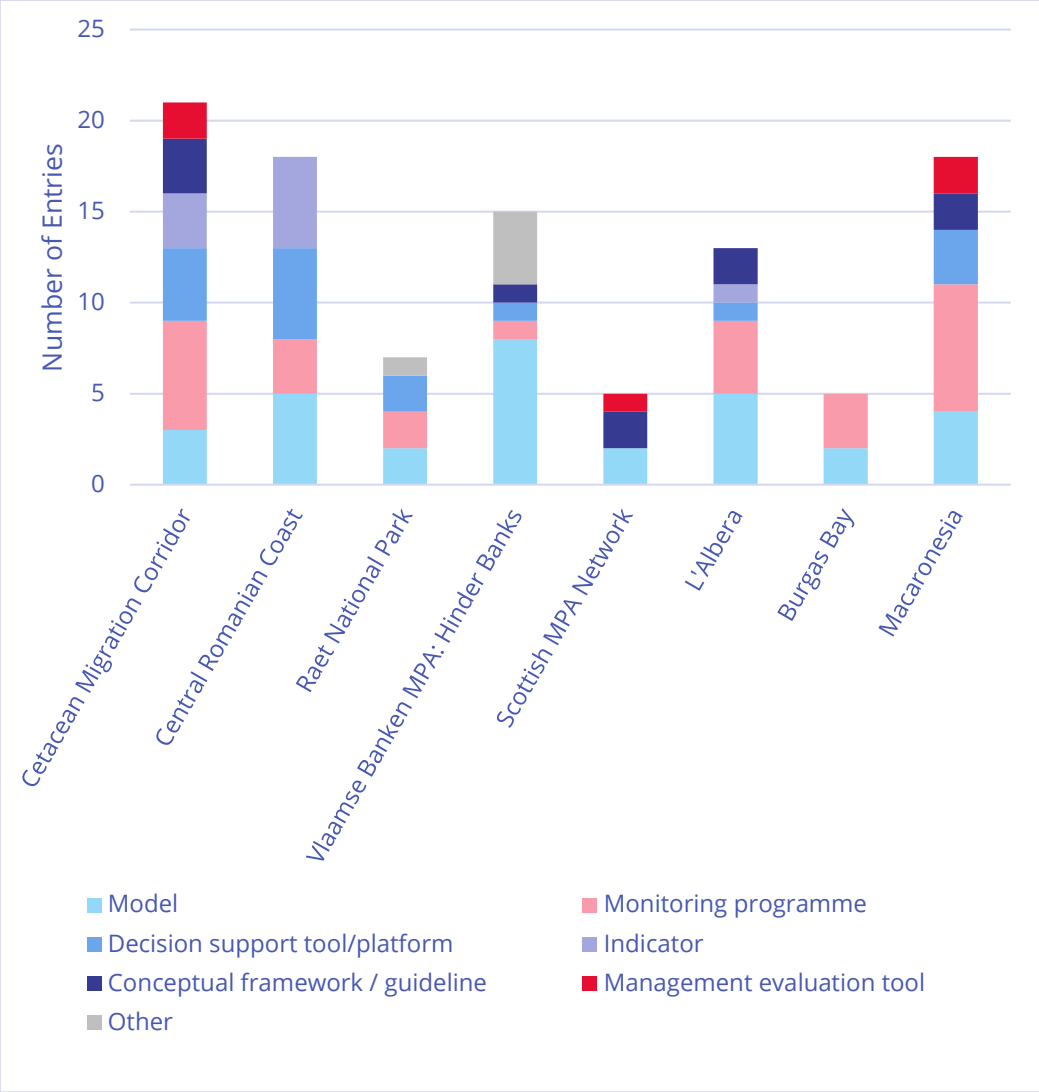


Figure 17. *Number of entries in the tool inventory by demonstration site and object type.*

4.1.10 Existing data inventory

The data inventory contained a total of 434 entries from nine DSs in May 2025. These entries included both individual datasets and data platforms and catalogues which provide access to multiple datasets. The data inventory will be maintained as a living document and will be expanded as and when other relevant data are identified, thereby serving as a resource and reference for other tasks. The quantity, quality and characteristics of the identified data differ somewhat by DS due to differences in the data availability and ecological, socio-economic, and management situations between the DSs. Annex 8 contains a numerical overview of the figures presented in this section.

69% of the entries in the data inventory were individual datasets and databases, but 72 data platforms and catalogues which provide access to multiple datasets were also included. The DS which provided the largest number of entries (143) was Macaronesia, due to its size and nature as a trinational site (see Figure 18). The DS

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

with the smallest number of entries (2) was the Italian Northern Adriatic, although since both of its entries are data platforms, data availability may not be as low at this DS than this figure suggests. Ecological data was the most common data type (180 entries, 41% of the inventory), while climate data was the least common (14 entries, 3%). There were some differences between the DSs in the types of data provided; for instance, the Scottish MPA network provided exclusively ecological data, while the Central Romanian Coast provided a relatively high proportion of biogeochemical data (see Figure 18).

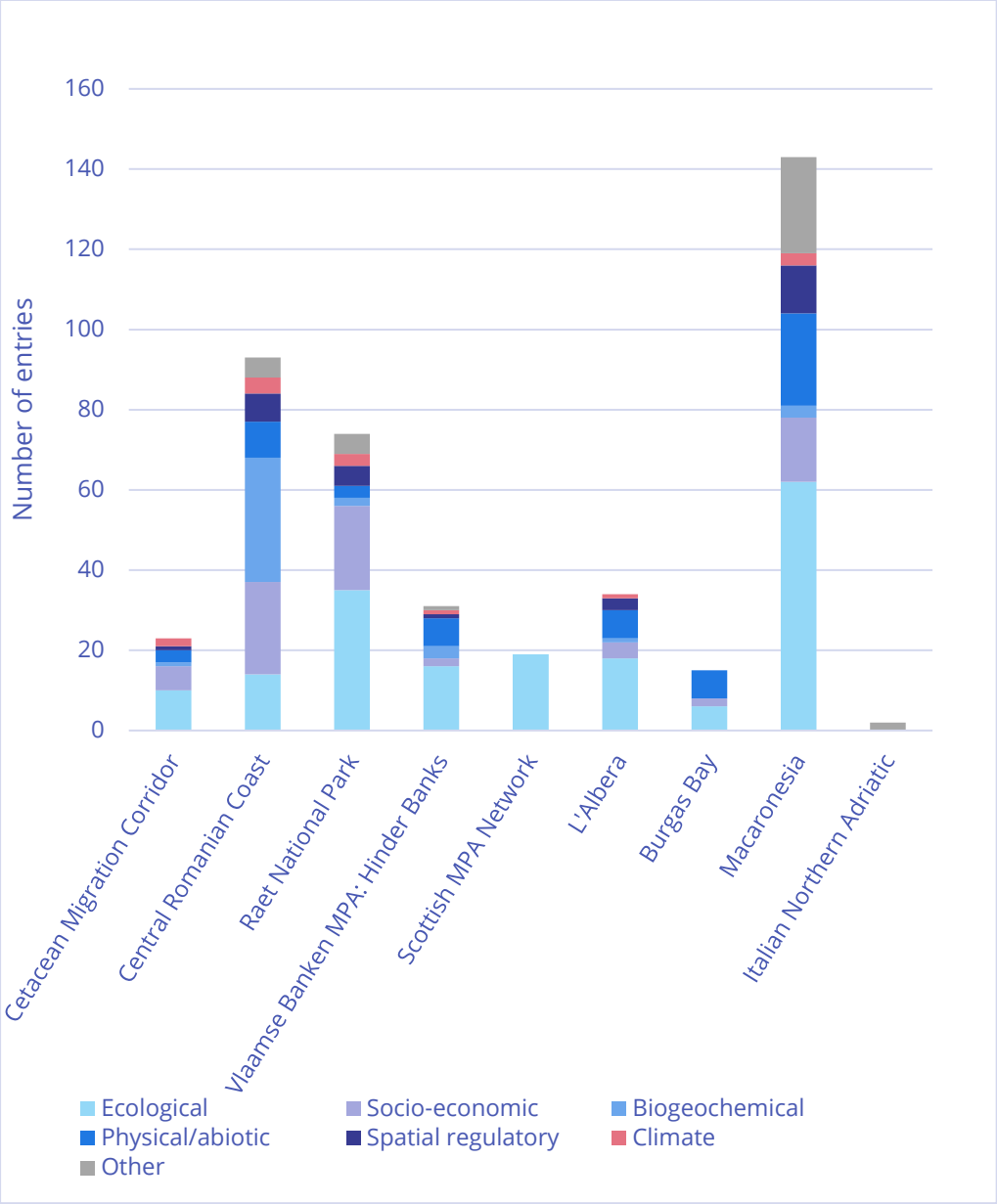


Figure 18. *Number of entries in the data inventory by demonstration site and data type.*

77% of the entries listed in the data inventory are open access. It is suggested that partners who wish to access non-open access data listed in the inventory contact the relevant DS for assistance. 147 (34%) of the entries are time series data, and 25 (6%) are future projections of mainly physical or climate data.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Spatial, temporal, or thematic data gaps are likely to persist and differ between the DSs. We recommend the following actions to try to close any data gaps:

- Search for data on European platforms such as EMODnet, SeaDataNet, or Copernicus Marine and Climate Change Services
- Search on open access repositories such as Zenodo
- Request access to relevant restricted datasets included in the data inventory
- Search in the literature and directly contact the authors of papers with potentially useful data
- Use proxy data, i.e., data on one or more parameters that can be used to infer the value of another parameter for which data is unavailable

4.2 Interviews and survey – Collection of local issues and needs raised by stakeholders and the general public

4.2.1 Local needs and expectations interviews

L'Albera, Italian Northern Adriatic, Burgas Bay, Vlaamse Banken and the Raet National Park DSs organised interviews with local stakeholders from the LSWG to investigate their needs and expectations about their respective DS conservation (see Figure 19).

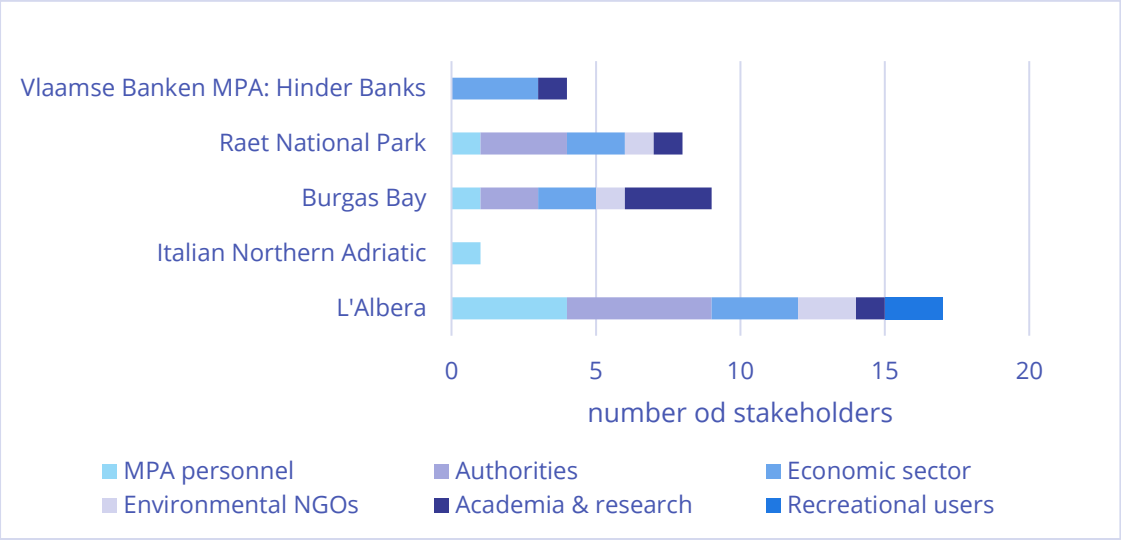


Figure 19. *Distribution of interview participants by stakeholder category across the demonstration sites.*

At the Italian Northern Adriatic, Burgas Bay, and Vlaamse Banken DSs, most stakeholders affirm to be aware of the conservation objectives. However, concerns were raised regarding the effectiveness of management. In Burgas Bay, stakeholders noted the absence of a management plan, while in the Northern Adriatic and Vlaamse Banken, existing management frameworks were perceived as inadequate to achieve effective conservation outcomes. In the Italian Northern Adriatic, it was reported that management responsibilities are limited to fulfilling conservation objectives of the

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

region. In the case of Vlaamse Banken, stakeholders considered the existing management plans unclear and poorly adapted to ecological realities.

At the Raet National Park and L'Albera DSs, differences of opinion emerged between MPA management teams and other local stakeholders. While those involved in MPA management reported a clear understanding of conservation objectives, other stakeholders perceived these objectives as either non-existent (L'Albera) or vague (Raet National Park).

Regrading effective conservation, in L'Albera, local stakeholders identified the nautical sector and recreational fisheries as key barriers, emphasizing the need for increased surveillance and enforcement of conservation measures. In Vlaamse Banken, many stakeholders expressed the view that the limited marine space is under pressure from multiple competing sectors, resulting in poor compromises and ineffective conservation. Several stakeholders referred to the MPA as a "paper park", highlighting concerns over its limited practical impact.

At the L'Albera DS, stakeholders expressed differing perceptions regarding MPA monitoring activities. While the MPA management team reported that seagrass monitoring had recently been conducted, other local stakeholders appeared unaware of it. This discrepancy may stem from the fact that official monitoring only began in 2024, and results have not yet been made public. In Burgas Bay, stakeholders acknowledged some environmental monitoring in the MPAs but noted it was not clearly connected to conservation objectives.

At both the Vlaamse Banken and Raet National Park sites, most stakeholders reported either the absence of an ecological baseline or very limited knowledge of past conditions. There was a general perception of lacking historical reference points to assess changes or impacts over time. In Belgium, this gap was especially noted regarding fishing grounds and oyster reefs.

When the topic of protection was raised, no stakeholders across the DSs explicitly expressed the need for strict protection. In Burgas Bay, several stakeholders noted that current protection measures were insufficient and weak. While opinions varied, some called for an expansion of the MPA, whereas others emphasized the importance of enforcing measures within the already designated area. In L'Albera, there was a broad consensus on the need to expand the MPA. Stakeholders highlighted that the current designation is primarily terrestrial and stressed the necessity of extending protection to additional marine areas, with the aim of designating the site as a Natural Park. In Vlaamse Banken, most stakeholders acknowledged that strict protection measures are not currently in place. Some expressed concerns that the EU objective of achieving 10% strictly protected marine areas could be controversial for certain sectors due to limited maritime space. Several stakeholders underlined the importance of prioritizing the enforcement of existing MPAs before considering any expansion. While in Raet National Park, there is a broad consensus among stakeholders on the need for stricter protection.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Beyond protection, the topic of ecological connectivity and restoration was also raised. At L'Albera, Italian Northern Adriatic, Burgas Bay, and Vlaamse Banken DSs, stakeholders noted that ecological connectivity is generally not considered in the conservation measures at the DS. However, across all these sites, stakeholders stressed that connectivity should be integrated into conservation planning and decision-making. In Vlaamse Banken, connectivity is primarily considered within the framework of ecological restoration rather than as a distinct conservation objective for stakeholders.

At Burgas Bay and Italian Northern Adriatic DSs, stakeholders agreed that no ecological restoration measures had been undertaken. Although in the Italian DS, restoration is foreseen (see section 4.1.5). In contrast, at L'Albera site, all stakeholders acknowledged ongoing restoration of Neptune seagrass. In the Vlaamse Banken, around half of the stakeholders identified some promising efforts, such as oyster reef restoration, currently underway, though these were seen as limited in scale and exploratory. Across DSs, stakeholders emphasized the importance of understanding the factors that contribute to the success or failure of restoration projects.

With regards to governance and participatory processes, in both Burgas Bay and the Italian Northern Adriatic DSs, stakeholders expressed a desire to enhance stakeholder engagement in decision-making processes related to conservation. Across these DSs, the identified means to improve participation include securing financial resources, organising meetings and workshops, and implementing communication and outreach campaigns. In L'Albera, most stakeholders are aware of the participatory process and consider it inclusive, although they emphasise the importance of involving additional sectors that are currently underrepresented. In the Vlaamse Banken, most stakeholders acknowledged that workshops are being organised and opportunities to participate are available. While feedback is solicited, there is uncertainty about the extent to which it is integrated into final decisions. Additionally, stakeholders noted that the aquaculture sector remains underrepresented in the participatory process. In Raet National Park, stakeholders expressed to need to engage more with the youth, immigrants, general public, primary industries, etc.

In Burgas Bay, a lack of stakeholder awareness has been identified as a significant barrier to improving understanding of MPAs. Fishing communities often express concerns about potential restrictions, frequently overlooking the long-term benefits of environmental protection and conservation. In both the Italian Northern Adriatic and Burgas Bay, tourism and fisheries represent important sectors with high socio-economic value. In L'Albera, there is a strong sense of pride and belonging associated with the area, and cultural heritage and traditional ways of life are highly valued. However, stakeholders identified tourists as the group least aware of nature conservation issues within the DS.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

4.2.2 Public survey

Eight DSs conducted public surveys to gather citizens' views and input on the protection and conservation of their local marine areas. The Central Romanian Coast, the Italian Northern Adriatic, and the Cetacean Migration Corridor recorded the lowest response rates, which may limit the representativeness of stakeholder perspectives in these areas (see Figure 20).

Most of the DSs had over 50% of respondents living within 5 km of the coastal zone, except for L'Albera and Cetacean Migration Corridor. Raet National Park stood out with exceptionally high local participation, reaching 93%.

More than 70% of respondents from L'Albera, the Italian Northern Adriatic, the Central Romanian Coast, and the Scottish MPA Network DSs reported being familiar with the concept of MPAs. Across the DSs, most respondents believed that marine protection in their respective area has had, or is expected to have, a positive local impact.

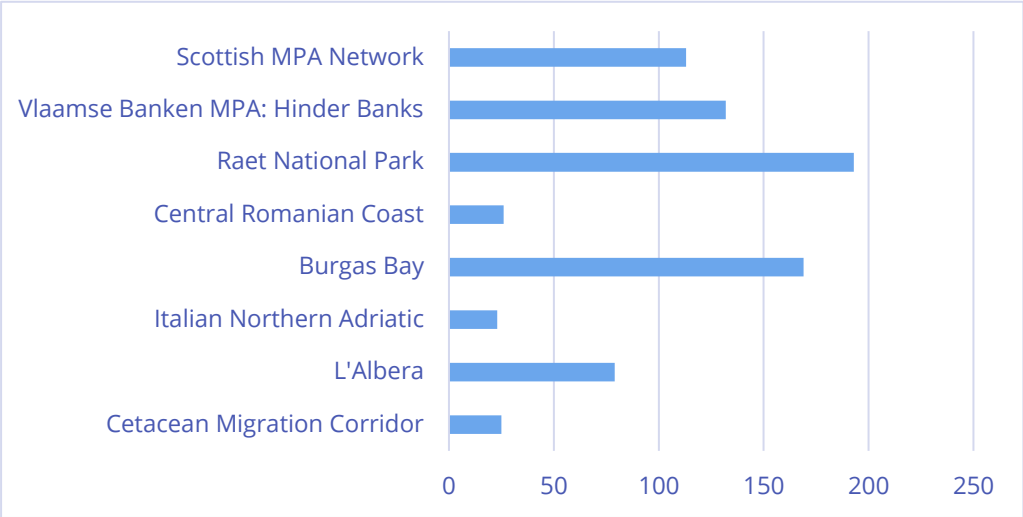


Figure 20. *Respondents to the public survey by demonstration site.*

In most DSs, a higher proportion of respondents identified social benefits provided by the DSs compared to economic benefits, although the difference was not always significant (see Figure 21). Among the perceived economic benefits, sustainable fisheries were the most frequently mentioned across the DSs. In terms of social benefits, increased environmental awareness was most cited, followed closely by enhanced opportunities for recreational activities.

The Italian Northern Adriatic and the Cetacean Migration Corridor DSs recorded the lowest proportion of respondents acknowledging the conservation objectives of their respective DS, with fewer than 50% indicating any level of awareness. In contrast, the four DS with the highest proportion of respondents reporting that they knew or partially knew the conservation objectives are Raet National Park (63%), the Scottish MPA Network (70%), L'Albera (73%), and the Central Romanian Coast (80%).

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

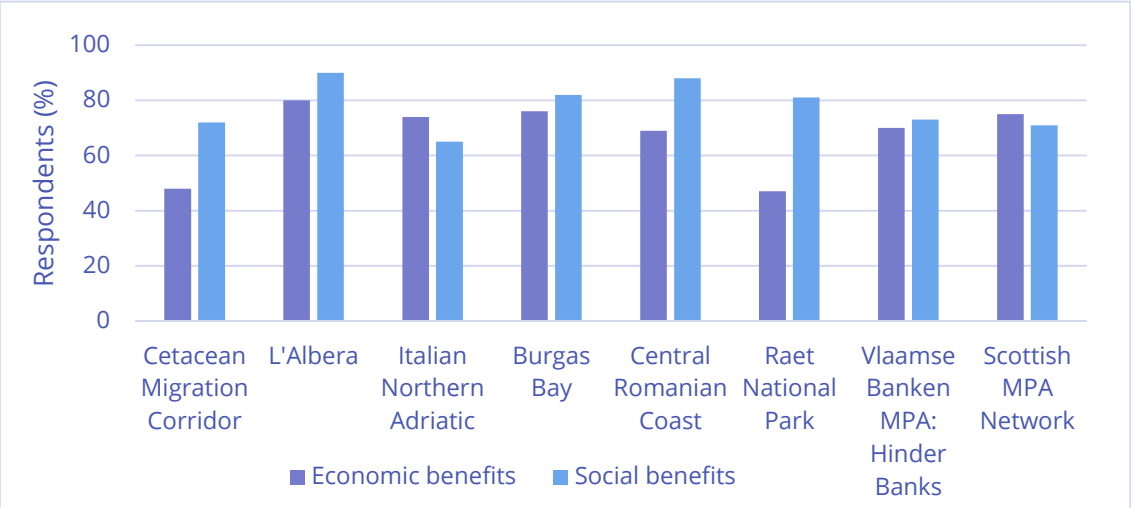


Figure 21. *Bar chart showing the percentage of respondents who recognised economic and social benefits associated with their demonstration site.*

Regarding awareness of activity restrictions within the DSs, most respondents indicated that they were not aware of any restrictions. Only L'Albera (50%), the Central Romanian Coast (42%), and the Scottish MPA Network (48%) showed an intermediate level of self-reported awareness among respondents. Raet National Park stands out, with a majority (77%) of respondents stated being aware of the restrictions. However, support for introducing additional restrictions is the lowest at this site compared to the other DSs.

When asked what type of information they would need to make decisions about implementing activity restrictions, respondents across the DSs most frequently identified two key needs: understanding the potential impact of these measures on local nature and knowing the type and location of the activities that would be restricted (see Figure 22).

In most of the DSs, around half of the respondents expressed a willingness to engage in decision-making processes related to future conservation measures. In contrast, respondents in the Italian Northern Adriatic (65%) and Burgas Bay (72%) DSs showed a relatively stronger interest in participation.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

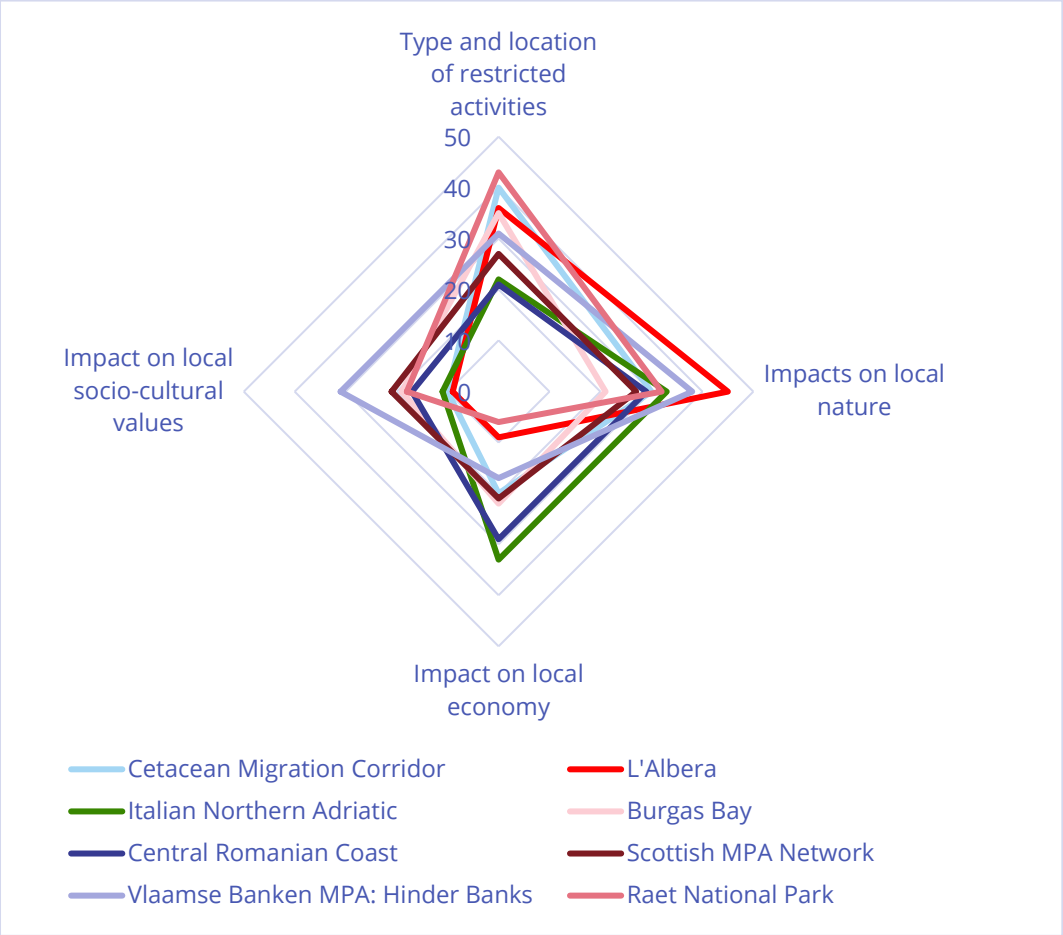


***Figure 22**. Radar chart showing the types of information identified by respondents as necessary for decision-making regarding the implementation of stricter protection measures in their demonstration sites. Values are expressed as the percentage of respondents selecting each type of information.*

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

5. Conclusion

This scoping and shortfall analysis provides a comprehensive overview of the context of the DSs, covering marine biodiversity, human activities, environmental pressures, monitoring systems, ecological connectivity, restoration activities, MPA expansion, strict protection, management practices, and existing co-management schemes. Inputs on local issues and needs from stakeholders and the general public have enriched the understanding of each DS. While contexts vary, several key findings are shared across most DSs.

Notably, across most DSs, limited financial and human resources, together with external pressures originating beyond DS boundaries that nonetheless affect ecosystems within them, were identified as key constraints to the implementation, monitoring, and enforcement of effective conservation measures. This highlights the importance of integrated MSP to align conservation goals with other sectoral interests.

Eight DSs exhibit a high density of overlapping human activities, reflecting complex multi-use dynamics. Fisheries are the most prominent activity across DSs, while tourism and leisure, together with transport, are also significant. Among reported ecological impacts, degradation of benthic communities is the most frequently observed.

Restoration measures, MPA expansion, and ecological connectivity are addressed in different DSs to varying degrees. Five DSs are piloting innovative monitoring technologies, including e-DNA and AUVs.

While three DSs are currently progressing toward co-management arrangements, many have already engaged in participatory processes in various forms, including stakeholder consultations, informal groups, public consultations, and working groups.

Public surveys revealed that, in general, local communities across DSs have limited awareness of conservation goals and uncertainty about how to participate in decision-making, highlighting the need for improved outreach. When asked what information they would need to make decisions about implementing activity restrictions, respondents most frequently identified two key needs: (i) understanding the potential impact of these measures on local nature, and (ii) knowing the type and location of the activities that would be restricted.

Five DSs conducted interviews with stakeholders from LSWGs. An important issue during this phase of the scoping analysis was stakeholder fatigue in several DSs, which made these interviews difficult to carry out. To address this, future engagement efforts should consider streamlining interactions and coordinating schedules to minimize repeated demands on the same stakeholders.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

DSs contributed with more than 400 datasets, data platforms, and data catalogues to the data inventory and over 100 tools to the tool inventory. The compiled data and tools provide a snapshot of differences in data availability between the DSs, will aid scoping activities and initial analysis in other tasks, and set the scene for the development of the Blueprint in WP6.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Annexes

Annex 1: Guidelines

1. Introduction & methods
1.1 Purpose of the Scoping analysis

The purpose of the scoping analysis in Task 4.1 (T4.1) of the BLUE CONNECT project is two-fold:

- To compile a knowledge base for each DS, to describe the existing state of the art in the DS regarding available baseline conservation data, (co-) management of MPAs and their monitoring and evaluation that will be used throughout the project.
- To collect needs at each DS, to understand how BLUE CONNECT can address local issues and needs raised by stakeholders and the general public (incl. MPA managers/regulators, planners, sector representatives, NGOs, scientists, local officials, etc.).

To guide DS leads with the compilation of the knowledge base, three documents should be used:

1. Guidelines for scoping analysis of DS (Part A): This document gives some background information on Task 4.1, the methods to conduct this task and detailed instructions to DS leads for collecting information that is needed for the scoping analysis.
2. Entry form for scoping analysis of Demo Sites (Part B): This document contains a series of tables and questions to collect information, data sources, best practices and barriers that are relevant for the BLUE CONNECT project in a standardized way. Detailed instructions for DS lead for completing this entry form are provided in the guidelines.
3. Data inventory table: This document should be used to collect a list of available datasets and data platforms at each DS which are potentially relevant for BLUE CONNECT. Detailed instructions for completing this table are provided in section 2.2.1.

1.2 General workflow

The scoping analysis consists of four steps (see Table 1).

1. The first step is the development of an entry form and accompanying guidelines for the compilation of a knowledge base. The BLUE CONNECT consortium has provided feedback on the scope and level of detail of the entry form to make efficient use of the DS efforts.
2. The second step is the inventory/collection of baseline information and data sources by the DS partners, using a combination of expert knowledge and desktop analysis

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

3. The third step is the collection of information, data sources and local needs from interviews with local stakeholders and consultations to validate or complement the collection of baseline information of step two and to understand how BLUE CONNECT can address local issues and needs raised by stakeholders and the general public.
4. The compilation and analysis of all DS results will be carried out as a final step, resulting in a report that will be handed over to the relevant project partners.

These steps involve continuous back and forth communication between task leads and DS partners to verify that the information and data collected suit the project needs.

1.3 Identification of the scope of the scoping analysis

The scoping analysis within Task 4.1 consists of a compilation of a knowledge base and the collection of local needs and expectations.

- The knowledge base for each DS will consist of the existing state of the art information focusing on three types of baseline information: factual information, existing data sources, and best practices and barriers.
- The local needs and expectations will address local issues and needs raised by stakeholders and the general public (incl. MPA managers/regulators, planners, sector representatives, NGOs, scientists, local officials, etc.).

The scope of the knowledge base has been further refined in close collaboration with the BLUE CONNECT consortium. Table 2 provides an overview of the thematic components of the knowledge base to be compiled by DSs.

2. Instructions for the compilation of a knowledge base in each DS

This section focuses on the collection of baseline information and data sources using expert knowledge and desktop analysis (step 2 of the Task 4.1 workflow outlined in section 1.2 'General Workflow') that will need to be conducted by DS leads starting in November with a deadline of 20 December 2024.

To guide DS leads with the compilation of the knowledge base, three documents should be used:

1. Guidelines for scoping analysis of DS (Part A – current document): This document gives some background information on Task 4.1, the methods to conduct this task and detailed instructions to DS leads for collecting information that is needed for the scoping analysis, in a standardized way.
2. Entry form for scoping analysis of Demo Sites (Part B): This document contains a series of tables and questions to collect information, data sources, best practices and barriers that are relevant for the BLUE CONNECT project in a standardized way. Detailed instructions for DS lead for completing this entry form are provided in the guidelines. Specific source documents that are being consulted to fill in the entry form should be referred to throughout the text, and listed under 'references' in the entry form. The pdfs/files should be saved in the respective T4.1 DS folder in the Teams environment. More detailed

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

instructions for the thematic components within the knowledge base are given in the following sections.

3. Data inventory table: This document should be used to collect a list of available datasets and data platforms at each DS which are potentially relevant for BLUE CONNECT. Detailed instructions for completing this table are provided in section 2.2.1.

2.1 Factual information

The factual information about the DS will gather the state of the art about the DSs, to be used as a baseline for further BLUE CONNECT work.

2.1.1 Introductory description of the DS.

Please provide introductory details of the DS using Table 1 of Part B.
For the description of the stage of establishment and the protection level in place, reference to the MPA Guide categories should be made (see Table 15, Table 16).

***Table 15**. Descriptions of MPA stages of establishment (Source: Oregon State University et al., 2019)*

Stage of establishment	Description
Proposed/committed	"The intent to create an MPA is made public."
Designated	"An MPA is specifically codified or dedicated through legally recognized means or authoritative rule. The MPA now exists 'on paper' and in law or other formal process."
Implemented	"An MPA transitions from existence on paper to being operational on the water, with concomitant management in place that aims to ensure compliance and enforcement. The MPA has a defined boundary, objectives and management strategy that reflect the primacy of conservation objectives (as per the IUCN definition of an MPA[1])."
Actively managed	"An MPA has demonstrable and ongoing enforceable rules, monitoring, evaluation, adaptive management and conservation outcomes."

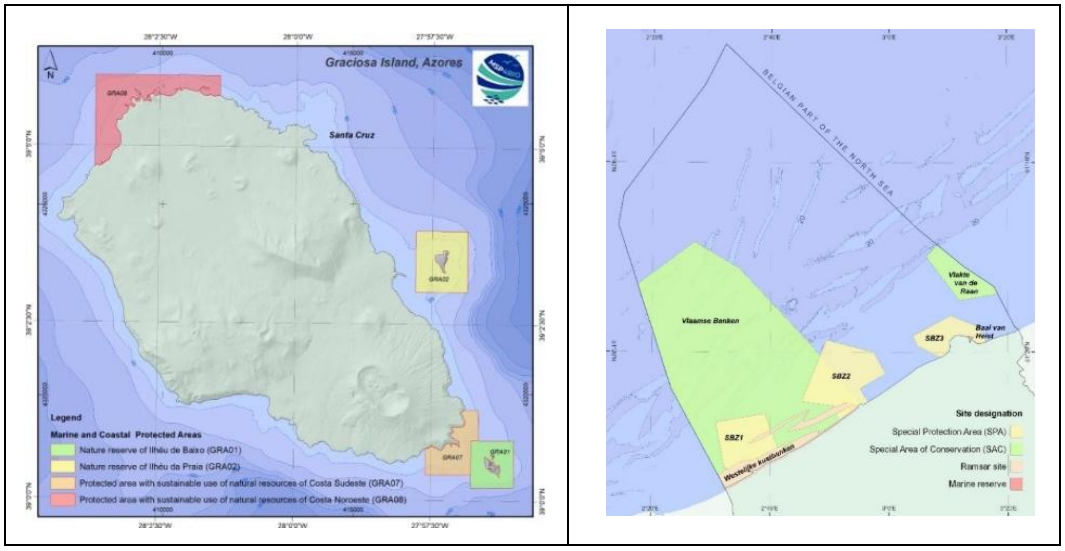
***Table 16.** Descriptions of protection levels (Source: MPA Guide, Grorud-Colvert et al., 2021).*

Protection level	Description
Fully protected / Strict protection	"No extractive or destructive activities are allowed; all abatable impacts are minimized."
Highly protected	"Only light extractive activities with low total impact are allowed, with all other abatable impacts minimized."
Lightly protected	"Some protection of biodiversity exists, but moderate to significant extraction and other impacts are allowed."
Minimally protected	"Extensive extraction and other impacts are allowed, but the site still provides some conservation benefits in the area."

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Please provide a map of the DS location which should contain the following:

- Geographic scope of interest for each DS, which includes “areas of influence” that can affect the conservation and restoration actions implemented in the DS
- MPAs of relevance to the DS
- Coordinates
- Map legend
- WGS 84/ UTM map projection (e.g. zone 31N for the Belgian part of the North Sea)



2.1.2 Factual information themes

The factual information is classified in biophysical, socio-economic, legal framework and governance and participation-related information themes (see Table 2).

2.1.3 Ranking method

To prioritise BLUE CONNECT work, a few questions involve ranking a series of features or pressures. This is done by highlighting a cell in yellow if it is relevant, and consequently ranking the cells highlighted in yellow. An example is given in Table 17, where starfish, polychaetes and sea cucumbers are highlighted as relevant, and the ranking indicates sea cucumbers are the most important feature.

Table 17. *Example of a ranking exercise of the relevance of feature subtypes for a specific demonstration site.*

	Relevance of feature subtype for the DS (1) highlight cell in yellow if relevant, and 2) give a score to the features highlighted in yellow with 1=most important)
Starfish	3
Sea turtles	
Sharks	
Polychaetes	2

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Sea cucumbers	1

2.1.4 Biophysical information

Please complete Table 2 of Part B with information relevant for your DS (Source typology: (Bocci et al., 2023). 'Relevance' in column 3 of Table 2 refers to: '*Conservation of the feature responds to a priority/need for the stakeholders/beneficiaries/directly involved people with the DS'.*

2.1.5 Socio-economic information

To collect socio-economic information, we created three tables, that are constructed based on the MSFD typology of anthropogenic activities, pressures and impacts.

2.1.5.1 Activities

We would like to understand what the activities are taking place within the DS (see Table 3). Filling in Table 3 in Part B involves two phases:

1. Highlight uses present in the DS in the second column and rank them according to level of occurrence at the DS.
2. For each use, highlight the specific activities present in the DS in the fourth column and rank them according to level of occurrence at the DS.

2.1.5.2 Pressures

We would like to understand what the current key pressures that affect the conservation features or objectives of the MPA are at the DS (see Table 4). Filling in Table 4 in Part B involves two phases:

1. Highlight pressure types occurring at the DSs in the second column and rank them according to level of occurrence
2. For each pressure type, highlight the pressures occurring in the DSs in the fourth column and rank them according to level of occurrence.

The details/notes section can be used to indicate lack of data or outdated data. For example, if existing pressures are expected to have impacted the conserved area as a part of a general trend, but cannot be established regionally due to lack of data/outdated data-sets.

2.1.5.3 Impacts

Highlight the type of impact of relevance in the second column in Table 5 of Part B and rank them (see Table 5) (Source typology: (Bocci et al., 2023)).

2.1.5.4 Scenarios

Highlight existing future plans or predictions for changes in pressures and activities in your DS in Table 6 of Part B.

2.1.6 Legal framework and governance information

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

This section is split up into specific aspects of MPA governance.

2.1.6.1 Existing MPAs overview

To understand the current context, it is useful to provide an overview of existing MPAs in place, or a selection of MPAs of interest within the DS area. Table 7 in Part B is used to collect this information. New areas not yet officially designated as MPAs can also be listed and the stage of establishment can be specified.

2.1.6.2 MPA conservation objectives

Per identified conservation objective for the list of MPAs, the information can be listed according to the header row in Table 8 of Part B. If conservation objectives are formulated in the native language, please translate to English. An example for Belgium is included in Table 18.

Table 18. *Information of the conservation objectives of the MPA 'SBZ 1,2,3' in Belgium.*

MPA name	SBZ 1,2,3
Conservation/restoration objective description	"Er is binnen de speciale beschermingszones (SBZs) voldoende rust voor de soorten zeevogels waarvoor de SBZ werd aangeduid (i.e. Dwergmeeuw, Grote stern, Visdief en Fuut) tijdens de periode van hun hoogste densiteit (e.g. broedperiode, winter) " Translation: "Within the 3 areas, the seabird species for which the SPA was designated should have enough rest during the periods at which they occur at their highest density (e.g. breeding and winter seasons)"
Objective code	18.1
Focal Species/Habitat type	Seabirds
Species/habitats mentioned in description of objective	4 species for which the SPA was designated (little gull, sandwich tern, common tern and great crested grebe)
URL source document	https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/2021_ontwerp_herziening_ihds.pdf
Notes/details	

2.1.6.3 MPA measures

List the conservation and restoration measures in place using the headings as in Table 9 of Part B.

2.1.6.4 MPA management plans

Please document all management plans in Table 10 of Part B.

2.1.6.5 MPA monitoring and evaluation

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Collect information on existing or innovative methods and techniques for monitoring and assessing biodiversity and pressures in marine environments in Table 11 in Part B. This overview can contain the methods that are applied in the MPA as part of the monitoring campaigns, as well as methods that are applied in the broader area if they have potential to be applied in the MPA in the future.

Term	Definition
Standard method/technique	Method/technique that is generally accepted by practitioners; well established method/technique that is being used or has been used by DS.
Innovative method/technique	Emerging method/technique. It does not exist yet but DS would benefit from its implementation; it was launched in the last X months as novel way of approaching the problem

Duplicate Table 11 in Part B for every type of relevant monitoring and evaluation method/technique.

2.1.6.6 Restoration measures

Collect information on existing restoration practices in Table 12 of Part B (source characteristics: Bocci et al., 2023).

2.1.6.7 Financing mechanisms in place

Collect information on existing financing mechanisms in place at the DS using Table 13 in Part B.

2.1.7 Participation-related information

2.1.7.1 Formalised co-management setups

Please indicate in Table 14 in Part B if co-management is already in place at your DS.

Please provide a short description of existing co-management setups in your DS in Table 15 in Part B, using the typologies described in Table 6 - Table 7.

- Table 6 provides a typology for specifying which stakeholder groups are involved in the co-management setup. These stakeholders are any key groups or institutions involved in the management and/or management outcomes of the MPA. The categories are adapted from the Quintuple helix model by Carayannis et al., 2012.
- Table 7 provides a typology for the characterisation of interaction type, from low ('Inform') to high ('Co-management') levels of interaction. The setups that are in place in the DS can be 'lower' forms of participation than co-management, but preferably cases of high participation are given. The table provides definitions of different levels of participation that can be used to categorise participation processes for MPA decision making.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

An example of a formalised co-management set-up in Italy is given in Table 19.

Table 19. *Information about a formalised co-management set-up in Italy.*

Name or function	MPA info (if linked to specific MPA)			Working language	Interested parties represented in setup*	Role of participant	Year of inclusion in management	Aim of Co-management	Notes/ Other/ Homepage/URL
	MPA name	MPA judicial authority	MPA management						
MPA Management Consortium	Capo Milazzo, Italy	Municipality of Milazzo	MPA Management consortium		Academia (University of Palermo)	Provides scientific research and advice (marine ecology), Monitors the ecological state of MPA	2005	Combining the involvement of a university, NGO and public administration allows the integration of different domains of expertise for achieving effective conservation	
					Civil Society NGO (Marevivo)	Implements conservation initiatives, raise awareness, engage local communities	2008		

2.1.7.2 Other existing participatory processes (e.g. stakeholder engagement setups or other interaction types)

Please provide a short description of other existing participatory processes in your DS in Table 16 in Part B, using the typologies described in Table 6 - Table 7.

Example of ongoing participatory processes in the DS in Norway is given in Table 20.

Table 20. *Information about ongoing participatory processes in Norway demonstration site.*

Name and year of initiation	Type of participatory process or set-up**	Aim of setup or process	Working language	Location of process	MPA info (if linked to specific MPA)			Interested parties represented in the process*	Role of participants	Activity/Method	URL/ Homepage
					Applicable to relevant MPA(s)	MPA authority and sector	MPA manager and sector				
Bevar Raet 2016	Co-creative process	Collaboration towards stricter protection in the MPA,	Norwegian	Agder, Norway	Raet nasjonalpark	County Municipality (Agder Fylkeskommune) Public sector	MPA board Raet Nasjonalpark (board)	Academia (Institute of Marine Research)	Scientific advice, Mapping and monitoring	Meetings(internal and public) Engaging local community in mapping process,	n/a

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

		Reduce conflict Raise awareness					Public sector	Civil Society (Naturvern forbundet, - environmental NGO) (Local interest group)	Provide opinions and advice	engaging in proposals to fund awareness raising activities etc)	
								Private Sector (Fiskarlaget -fishing association)	Provide opinions and advice		
								Public Sector (5 Municipalities bordering the MPA) Directorate of Fisheries	Provide opinions and advice		

* Public sector/private sector/academia/civil society groups/Nature's values, see Table 6 for descriptions of categories

** Inform/consult/involve/collaborate/empower, see Table 7 for descriptions of categories

2.2 Existing data sources and methods

2.2.1 Existing data sources

DS Partners are requested to provide an overview of the availability of different types of data, including spatial and temporal patterns in data availability across the sites. Information on available relevant data from the DS will be compiled in an inventory, which will serve as a centralised catalogue of data at the DS scale that all tasks can browse. Six broad-scale data types were defined based on the data anticipated to be used in the project and feedback from tasks: ecological data, physical/abiotic data, biogeochemical data, climate data, socio-economic data and spatial regulatory data. These data types are defined in Table 21.

Table 21. *Explanation of data types used in Part B entry form and data inventory table.*

Theme	Data type	Explanation	Examples
Biophysical	Ecological data	Data related to living organisms and their interactions with each other and their environment	Distribution of habitats and species of conservation interest (keystone species, habitat formers, invasive species, species of commercial/conservation relevance), species traits, food web key functioning species, carbon sequestration, primary

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

			production, seabed composition/types
	Physical/abiotic data	Data related to the physical environment	Currents, bathymetry, salinity and temperature, seabed characteristics
	Biogeochemical data	Data relating to the chemical properties of seawater, and their interactions with organisms and the physical environment	Sea chemistry, acidification, nutrients, oxygen, salinity, chlorophyll
	Climate data	Data related to the climate	Climate change projections, temperature, and other variables if available: e.g. radiation
Socio-economic	Socio-economic data	Data related to human activities and valuations	Human uses (if possible maps), economic data
Legal framework and governance	Spatial regulatory data	Purely spatial data delimiting marine areas with certain regulatory statuses	MPA boundaries, OECM boundaries, MSP spatial data

2.2.1.1 Data availability

Please answer the questions in Table 17 of Part B to the best of your knowledge to provide a brief overview of the availability of data at your DS. To answer questions 1-6, place an X in either the Yes or No column to indicate whether certain broad-scale types of data are available at your DS or not. You can explain your answer further in the Remarks column. For questions 8-10, provide short written answers.

2.2.1.2 Data sources inventory

We would like to ask each DS lead to make up an Excel inventory of the data sources on topics listed in Table 21. It is not the actual data we want to obtain but an inventory of which datasets and data platforms are available with the metadata describing the origin, status,... of the data.
An overview of available data should be compiled in the data inventory Excel table for every DS. A template is provided on Teams, please make a copy of this template and save it in the DS directory under T4.1. The data inventory uses the same data types as described in Table 21.

The Excel data sources inventory table has two visible tabs:

- Column Descriptions: descriptions of the information to be included in the columns in the Data Inventory tab
- Data Inventory: template for compiling the metadata of available datasets and data platforms. One example of a dataset is given (row 3).

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Per dataset or data platform, information (i.e. metadata) should be described as columns in the tables. Please fill in as many columns as possible for each entry. Some columns (e.g. spatial resolution, temporal resolution) will not be relevant for all datasets; in these cases, please leave these columns blank. The following columns are included:

- Dataset name
- Data type: see Table 21.
- Link/metadata page: a clickable link to access the data or metadata
- Subtype/variables: a more specific description of data subtype, variables, and/or dataset contents
- Ownership
- File format (e.g. CSV, NetCDF, Shapefile…)
- Accessibility (Open access, to be requested, other)
- Data access type (means of accessing the data, e.g. WMS)
- Scale: spatial scale of the dataset using the following five categories:

1. DS (partial): the dataset covers part of the DS
2. DS (full): the dataset covers the whole DS
3. Sea basin (e.g. many datasets from OSPAR, HELCOM, SPA/RAC, etc.)
4. European seas (e.g. many EMODnet and Copernicus datasets)
5. Other: datasets with a different spatial scale including national- and global-scale datasets
6. Non-spatial data: data with no spatial scale

- Spatial coverage: a written description of the dataset's spatial coverage. Leave blank if the data do not have a spatial element.
- Spatial resolution: resolution of raster data including the unit. Leave blank if the data are not raster data.
- Temporal coverage: start and end date of the data in two separate columns. If the data are not a time series, add the date of data collection in the start date column
- Temporal resolution: frequency of data collection. Leave blank if the data are not a time series
- Time series available?: Yes / No
- Future scenario available?: Yes / No. If yes, specify details e.g. up to what year is the projection
- Object type: whether entry is a dataset/database, a data platform/catalogue, a tool, or a model)
- Notes: any additional information can be added here
- Data platform: platform hosting the data, where relevant

2.2.1.3 Examples of data sources

The data sources below might contain relevant data for the DS (based on UNEP, 2019). These can also be screened by the DS leads to complete the data availability table in the context of the DS. High resolution data should be prioritised.

International sources examples

- Oceanic Biogeographic Information System (OBIS): http://www.iobis.org

- OBIS Seamap: http://seamap.env.duke.edu
- GOOS Bio-Eco portal: an overview of monitoring programmes: https://bioeco.goosocean.org/
- World Register of Marine Species: https://www.marinespecies.org/
- FISHBASE: http://www.fishbase.org
- AquaMaps: http://www.aquamaps.org
- Global Biodiversity Information Facility (GBIF): http://www.gbif.org/developer/maps
- OCEAN DATA VIEWER (UN WCMC):
- Global distribution of seagrasses: http://data.unep-wcmc.org/datasets/7
- Global distribution of salt marshes: https://data.unep-wcmc.org/datasets/43
- Global distribution of cold-water corals: https://data.unep-wcmc.org/datasets/3
- Global distribution of seamounts and knolls: https://data.unep-wcmc.org/datasets/41
- IUCN Red List of threatened species-spatial data: https://www.iucnredlist.org/resources/grid
- Important Marine Mammal Area E-Atlas: https://www.marinemammalhabitat.org/imma-eatlas/
- Ecological classifications etc.: https://marineregions.org/sources.php

European source examples:

- EMODnet: European Marine Observation and Data Network: http://www.emodnet.eu
- Copernicus Marine Service: https://marine.copernicus.eu/
- Copernicus Climate Change Service: https://climate.copernicus.eu/

Regional source examples:

- Biodiversity data from SPA/RAC (http://data.medchm.net/en/catalogue) (Mediterranean)
- OSPAR data information and management (https://odims.ospar.org/en/) (NE Atlantic)

National source examples (from Belgium):

- IMIS: https://www.vliz.be/en/imis?module=dataset
- Kustportaal: https://kustportaal.be/en
- RBINS metadata catalogue: https://metadata.naturalsciences.be/geonetwork/srv/eng/catalog.search#/home
- Flemish Banks Monitoring Network API: https://api.meetnetvlaamsebanken.be/V2-help/

MSP4BIO has compiled an inventory of relevant data for its six test sites, some of which may be useful for BLUE CONNECT. This data inventory can be browsed at https://msp4bio.vliz.be/.

2.3 Best practices and barriers

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

DS partners are requested to answer some questions about best practices and barriers that are relevant for the project. This type of qualitative information will also be collected using tables but may require some reflection and analysis. The topics of interest for the project are based on seven overarching topics: 1) MPA management & governance (incl. monitoring), 2) strict protection, 3) MPA expansion & new MPAs, 4) connectivity, 5) active restoration, 6) participation, and 7) economic, societal and cultural needs. These seven topics were defined using common challenges and needs in the descriptions of the DS in the grant agreement (gathered using anExcel sheet). Work at the DS can benefit from best practices and barriers collected from other DS.

2.3.1 MPA management and governance - Biodiversity monitoring and evaluation practices

Best practices in biodiversity monitoring and evaluation can be collected using Table 18 in Part B.
Any barriers which may limit deployment of novel observation techniques (e.g. legal constraints) can be added in Table 19 in Part.

2.3.2 Strict protection practices

Strict protection is defined in Table 16. Practices related to the designation of strictly protected MPA's can be collected in Table 20 of Part B.

2.3.3 New MPA/expansion practices

Practices related to the designation of strictly protected MPA's can be collected in Table 21 of Part B.
Examples of MPA designation and MPA expansion strategies can be detailed in Table 22 in Part B.

2.3.4 Ecological connectivity practices

Practices related to the ecological connectivity can be collected in Table 23 in Part B.

2.3.5 Active restoration practices

Practices related to active restoration practices can be collected in Table 24 in Part B.

2.3.6 Participation / Co-management processes

To identify drivers and barriers of participation in existing co-management setups, Tables 2 in Part B can be used.

2.3.7 Economic, societal and cultural needs

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Best practices related to considering economic, societal and cultural needs can be collected with Table 26 in Part B.
When filling these up please think if marine natural values and ecosystem services inherently connected to the DS are linked to the economic, societal and cultural needs reported in Table 26 in Part B. These are the ones that will provide the best anchoring for DS targeted communication efforts. What economic, societal and cultural needs are impacted by increased or lack of protection?

Annex 2: Interview and survey questions

Table 22. *Questionnaire for conducting qualitative semi-structured interviews with LSWG members of demonstration sites.*

Question	
1. MPA management & governance	
Conservation objectives	
1.1	Are the conservation objectives for your Demo Site MPA well defined? Please describe strengths and/or weaknesses
1.1.2	How do you monitor/evaluate the progress for achieving these objectives?
1.1.3	Are these objectives clear for the management team?
1.1.4	Are these objectives clear for the other Stakeholders of the MPA?
MPA management	
1.2	Is the MPA in your Demo Site managed in a way that enables effective conservation?
1.2.1	If yes: please rate the role of these elements: Clearly defined conservation targets - quantifiable (measurable?) conservation targets - updated management plans - adequate monitoring tools - coherent governance frameworks - high levels of stakeholder engagement etc.
1.2.2	If no: please indicate key barriers for effective conservation (provide a list of usual suspects or leave open for more text)
MPA management plans	
1.3	Are there management plans in place for the MPA in your Demo Site?
1.3.1	If yes, do you think they are useful in achieving the conservation objectives of the MPA?
1.3.2	Are these plans operational? - has not started - has started but it's delayed - has started and is going well - management plans have been implemented - management plans have been implement and are under revision
1.3.3	Are they being assessed?
1.3.4	Are they being updated?
1.3.5	How is the implementation going?
MPA monitoring	
1.4	What do you think about the characterization of the status baseline of the MPAs in your Demo Site?
1.4.1	What do you think about the level of monitoring of the MPAs in your Demo Site?
1.4.2	Are biodiversity trends related to conservation objectives monitored?

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

1.4.3	Is there monitoring related to restoration measures? Should there be?
1.4.4	Is there monitoring related to climate change mitigation/adaptation of the MPA? Should there be?
2. Strict protection	
2.1	What do you think about the current level of protection in place at the Demo Site? Is it adequate to meet conservation targets?
3. New MPA/expansion	
3.1	Do you think there is a need for any MPAs to be expanded? If so, why? If not, why not?
3.2	Do you think any new MPAs should be designated? If so, why? If not, why not?
4. Ecological connectivity	
4.1	What do you think about the current measures in place at the Demo Site to take into account ecological connectivity? Are they adequate?
4.2	Do you think a connectivity assessment should be carried out for your Demo Site?
4.3	To your knowledge is there enough data available at the Demo Site for connectivity modelling? If no, what data is lacking?
5. Active Restoration	
5.1	What do you think about the current active restoration measures in place at the Demo Site? Are they adequate to meet conservation targets?
6. Participation and representativity	
6.1	Is there a participatory process/set-up in place at the Demo Site?
	If yes – proceed to 6.2 If no, jump to 6.5
6.2	What is the main purpose/objectives for the participatory process?
6.3	Do you think the participatory process is/or will be fulfilling its main purpose/objective? If yes: What in your opinion are the key enablers? If no: What in your opinion are the key barriers?
6.4	Would you rate the current participatory process as *inclusive* (engaging a wide range of groups/stakeholders) or *selective* (engaging a narrow range of groups/stakeholders)? If selective: What groups/stakeholders should be included to make the process more inclusive?
6.5	Do you think the conservation process would benefit from a participatory process? If yes: what is needed to initiate a participatory process?
7. Community awareness & ocean literacy	
7.1	In your opinion, is the local community sufficiently aware of the purpose/objective for the conservation process in the Demo Site? Yes: awareness is equally distributed across society Partly: awareness is higher among certain groups or stakeholders No: awareness is generally low across society If yes: What are the key enablers for high community awareness If only partly: Which groups or stakeholders appear unaware? If no: What are the key barriers for raising community awareness?
8. Economic, societal and cultural needs	
8.1	What values of economic importance are generally associated with the Demo Site? Please provide examples.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

8.2	What values of cultural importance are generally associated with the Demo Site? Please provide examples.
8.3	Other values of importance associated with the Demo Site? Please provide examples.
8.4	In your opinion, are some values unrecognized or unacknowledged in the conservation process? If yes: please provide some examples
8.5	In your opinion, how does strict protection of the MPA affect the stated values? Positively/Neutral/Negatively

BLUE CONNECT Public Survey!
Thank you for taking part in this survey of the **BLUE CONNECT project** (https://blueconnect-project.eu/)!
Your insights are essential to understanding public perspectives on **marine conservation, economic and social values of marine protected areas (MPAs), and local needs and concerns**.
For this survey, we invite citizens with a lot of knowledge about marine conservation, as well as those who don't.

Background
'**Marine Protected Areas (MPAs)** are areas of the ocean set aside for long-term conservation to increase the quality and extent of ocean protection'.
In [country of demo site], the [name of DS/MPA] has been designated as a MPA.

What to expect?
The survey consists of three sections:
👤 **Your profile** (basic information about your connection to the area)
🌊 **Marine conservation and the value of MPAs** (your awareness and opinions)
⚓ **Conservation measures and local needs regarding future protection** (your opinion on restrictions of human activities and stricter protections)
The survey will take approximately 4 minutes to complete. Your answers are **anonymous** and will be used solely for research and project development purposes.
Your voice matters! Let's work together for a well-connected and sustainable future for our coastal and marine environments.
👉 Let's begin!

Profile respondent

1. What is your age?
   - <30 years old
   - 30-50 years old
   - >50 years old
2. What is your gender?
   - Female
   - Male
   - Other
3. How far away from the coastal region of the *Demo Site* do you live?
   - <5km away
   - 5-20km away
   - >20 km away
4. Which of these profiles describe you? (multiple answers possible)

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- Local citizen living near to (coastal region of the demo site)
- Working within marine/nature governance (profession)
- Have economic interest in DS (fishermen, tourism operator, etc.)
- Other

Part 1: Questions about marine conservation and the values associated with the MPA

5. Have you heard of marine protected areas or nature reserves at sea before this survey?
   - Yes
   - Partly
   - No
6. In your opinion, do you think the protection of marine/coastal life in the [name of DS/MPA] has /will have a positive impact on the local community in the area of the MPA?
   - Yes
   - Partly
   - No
   - I don't know
7. In your opinion, does the MPA provide any economic benefits to the local community?
   - No
   - Yes
   - I don't know
8. If you said yes, please select the top 3 economic benefits of the MPA for the local community?
   - Sustainable fisheries
   - Tourism and recreational activities
   - Aquaculture activities
   - Job creation
   - Increased property values
   - Climate resilience
   - Local services and products
   - Cultural and heritage preservation
   - Research opportunities and grants
   - Educational opportunities
   - Other
9. If you said other, please provide some details
10. In your opinion, does the area/MPA provide any benefits to people?
    - No
    - Yes
    - I don't know
11. If you said yes, please select the top 3 values of the MPA for the local community?
    - Recreation
    - Protection of sacred sites
    - Traditional fishing practices
    - Cultural identity
    - Community involvement
    - Environmental awareness
    - Food security
    - Mental health
    - Physical health

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- Resilience to climate change
- Nature experiences
- Other

12. If you said other, please provide some details

Part 2: Questions about current and proposed conservation measures in the local DS/MPA

13. Are you aware of the (current) conservation objectives in [name of DS/MPA]?'?
    - Yes
    - Partly
    - No
    - Conservation objectives are not in place
14. Are you aware of any restrictive measures in [name of DS/MPA]?
    - Yes
    - No
    - There are no existing measures in place
15. Which sea-related activities are restricted in [name of DS/MPA]? Select one or more options.
    - Fisheries
    - Harvesting of marine resources (shellfish, seaweed etc)
    - Aquaculture (fish, shellfish, seaweed etc)
    - Dredging
    - Anchoring
    - Recreational activities (boating, diving, sightseeing, fishing, jet skiing)
    - Commercial transport/traffic
    - Dumping/polluting
    - Wildlife interaction
    - unauthorized research and sampling
    - drone and underwater vehicle use
    - Other
    - I don't know
16. In your opinion, are the (current) restrictions sufficient to protect the marine life in DS?
    - Yes
    - Partly
    - No
    - I don't know

Part 3: Questions about stricter protection in the local DS/MPA

17. What is your attitude towards stricter protection of [name of DS/MPA]?
    - supportive
    - indifferent
    - opposing
    - I would need more information to decide (if selected, go to 18)
18. What do you need more knowledge on to decide pro-con stricter conservation measures (select as many as you need)?
    - Which or where human activities will be restricted
    - The impacts of restriction on local nature
    - The impact of restrictive measures on local economy
    - The impact of restrictive measures on local social and cultural values
    - Other
19. How would stricter protection of [name of DS/MPA] impact your daily life?
    - Positive

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- Neutral
- Negative
- I would need more information to know

20. Which restrictive measures would you like to see in the region?
    - Fisheries
    - Harvesting of marine resources (shellfish, seaweed etc)
    - Aquaculture (fish, shellfish, seaweed etc)
    - Dredging
    - Anchoring
    - Recreational activities (boating, diving, sightseeing, fishing, jet skiing)
    - Commercial transport/traffic
    - Dumping/polluting
    - Wildlife interaction
    - unauthorized research and sampling
    - drone and underwater vehicle use
    - Other
21. Are you able to impact current or future conservation measures in your [name of DS/MPA]?
    - Yes, I engage in participation processes to impact decision-making
    - Yes, but I have no interest/time
    - I would like to but don't know how to
    - No, but I would like to
    - No, I have no interest/time

Thank you!
Your feedback will help us assess public awareness, identify key concerns, and guide decision-making on conservation measures in the region.

Annex 3: Environmental socio-economic information

A. Macaronesia

As the Macaronesia DS includes several islands, it covers a large and ecologically diverse area. Many different taxonomic groups have been identified as key conservation interests, indicating a potentially high level of species biodiversity. The DS also hosts a wide variety of habitats including seamounts, hydrothermal Vents (see Table 23).

The Azores are a Mid-Atlantic hotspot for marine megafauna (Douvere & Ehler, 2020) while Cape Verde is recognised as a refuge for loggerhead turtles (*Carretta caretta*) during nesting season (Patino-Martinez et al., 2022). In addition, Cape Verde is also a hotspot for endemic gastropod (Freitas et al., 2019).

The Macaronesia DS is subject to a wide range of human activities (see Figure 23). Professional harvesting of fish and shellfish is a major activity, complemented to a lesser extent by recreational fishing. The most significant impacts include the overexploitation of fish stocks and the degradation of benthic communities in both hard- and soft-bottom habitats.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

The collection of marine plants also occurs in the area. Tourism and leisure are important, with whale watching being especially well-developed. The site is a key zone for transport, primarily through shipping and related infrastructure, with anchoring also commonly practiced. The deterioration of spawning and nursery habitats for marine species is a widespread concern.

Table 23. *Relative importance of taxonomic groups and habitats in Macaronesia demonstration site. The colour scale indicates the relative importance.*

Taxonomic group		Species
Fish	●	*Thunnus sp.*
Invertebrate	●	Cephalopoda
Bird	●	
Plant/Algae	●	
Reptile	●	*Caretta caretta*
Mammal	●	*Balaenoptera sp.;Eubalaena glacialis*
Habitat		
Benthic habitats	●	
Coastal soft bottom Seagrass meadow	●	
Coastal hard bottom	●	*Reefs*
Deep sea	●	*Corals*
Pelagic	●	
Seamounts	●	
Hydrothermal Vents	●	
Coastal soft bottom	●	
Legend		
● high importance ● moderate to high importance	● medium importance ● low importance	● very low importance

The cultivation of living resources is another major use. Agriculture is a vital industry in the Azores, with crops such as pineapple, tea, and bananas. Aquaculture is also present, though to a lesser extent.

Additional activities include the canalization and modification of watercourses, coastal defense measures, and the restructuring of seabed morphology. The area is further used for the transmission of electricity and communications through

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

submarine cables. Mineral extraction, as well as offshore oil and gas operations, also occur within the region.

Plastic pollution and anthropogenic noise from shipping and port operations further contribute to environmental pressures on the DS.

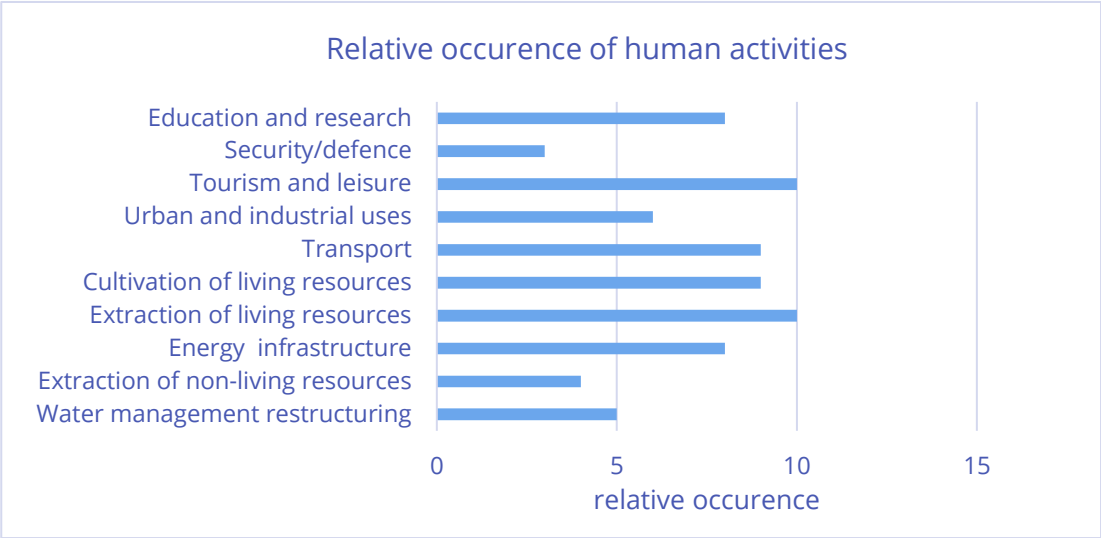


***Figure 23**. Bar chart illustrating the relative occurrence of uses and human activities within Macaronesia demonstration sites. Values are ranked on a scale from 0 = lowest occurrence to 10 = highest occurrence.*

In the Macaronesia region, several initiatives anticipate future changes and propose targeted measures to address evolving pressures on marine and coastal ecosystems. The IPCC AR6 (2021) projects significant impacts from climate change, such as sea level rise, ocean warming, and increased extreme weather events, which are expected to degrade ecosystems, erode coastlines, and reduce critical habitats for spawning and nesting. The ICES Fisheries Overviews for the Azores ecoregion foresee an increased emphasis on data collection and fisheries management, supporting the development of adaptive management plans to respond to changing fish stock dynamics. The Regional Program for Climate Change in the Azores is preparing for greater vulnerability to sea level rise by promoting resilient urban and coastal infrastructure. The National Ocean Strategy includes actions to reduce marine litter and enhance coastal clean-ups, which will improve habitat conditions in the face of mounting anthropogenic pressure. Additionally, it foresees expanded sustainable tourism, which may increase human activity but also offers opportunities to implement better waste management. Finally, the International Commission for the Conservation of Atlantic Tuna (ICCAT) plans to reinforce regulations on migratory species and tuna fishing to adapt to shifts in stock distribution caused by climate change, aiming to prevent overfishing and sustain regional fish populations.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

B. Cabo Roche

The area surrounding Cabo Roche is a biodiversity hotspot, characterised by a wide range of benthic habitats influenced by both Atlantic and Mediterranean conditions. The DS supports resident and migratory marine mammal populations, as well as top predators. Coastal hard- and soft-bottom habitats within the site serve as critical refuges for vulnerable species (see Table 24). In addition, pelagic habitats in the DS are of significant ecological importance.

Table 24. *Relative importance of taxonomic groups and habitats in Cabo Roche demonstration site. The colour scale indicates the relative importance*

Taxonomic group		Species
Mammal	●	*Tursiops truncatus, Delphinus delphis, Balaenoptera physalus, Orcinus orca*
Fish	●	*Thunnus thynnus, Prionace glauca, Isurus oxyrinchus, Epinephelus marginatus, Sciaena spp., Pagrus pagrus, Polyprion, Homarus gammarus, Palinurus elephas*
Invertebrate	●	*Eunicella spp., Paramuricea clavata, Axinella spp., Pentapora fascialis, Astroides calycularis*
Habitat		
Coastal soft bottom	●	Hydrozoans, tube-dwelling polychaetes, infaunal bivalves, Caulerpa
Coastal hard bottom	●	Halocynthia papillosa, sponges, bryozoans, Epinephelus, Palinurus
Coastal hard bottom reefs	●	
Pelagic	●	
Legend		
● high importance ● moderate to high importance	● medium importance ● low importance	● very low importance

A wide range of human activities takes place in the Cabo Roche DS (see Figure 24), generating varying levels of pressure on marine and coastal ecosystems. Extraction of living resources is among the most prominent uses. Recreational fishing is particularly intense during the summer months, primarily targeting demersal species. In some areas, the activity remains unregulated, raising concerns over overexploitation, especially of vulnerable species such as grouper and lobster, for which signs of population decline have been reported. Professional small-scale fishing is also practiced, while shellfish gathering, although historically present, now appears to be marginal or seasonal.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

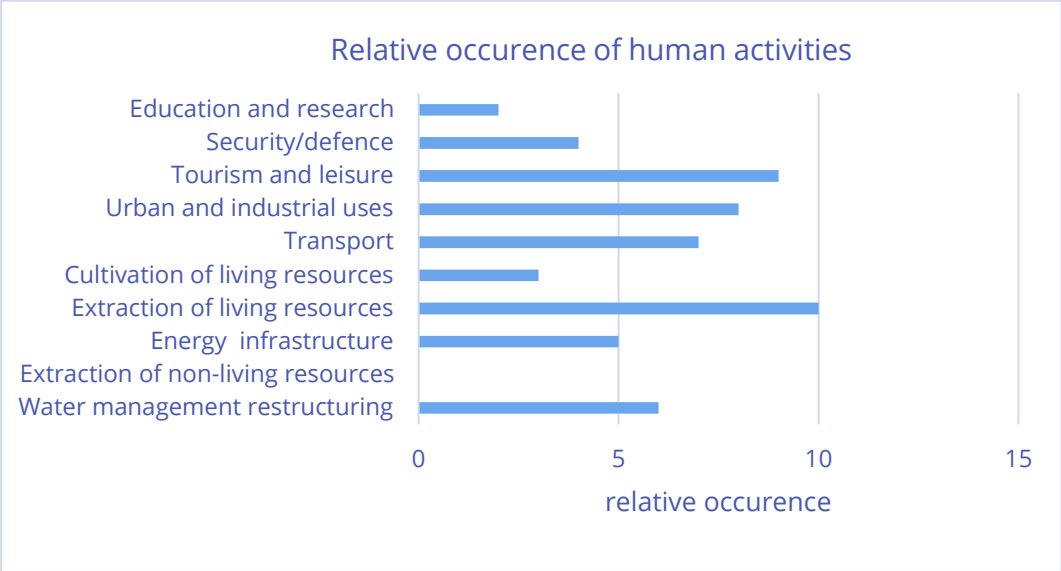


Figure 24. *Bar chart illustrating the relative occurrence of uses and human activities within Cabo Roche demonstration site. Values are ranked on a scale from 0 = lowest occurrence to 10 = highest occurrence.*

The presence of lost fishing gear, including nets and lines, has been documented, with negative impacts on coralligenous habitats and associated benthic fauna. Additionally, marine litter originating from fisheries contributes to environmental degradation.

Tourism and recreational activities represent another major source of pressure, particularly during the summer. These include beach tourism, sailing, and scuba diving, with the latter concentrated around sensitive coralligenous areas. Noise pollution from small boats and anchoring practices further disturb the marine environment.

The area includes sports and fishing harbours, such as the Port of Conil, which support both commercial and recreational maritime activities. Moderate coastal shipping traffic and boat launching occur in nearshore waters, while international maritime traffic crosses the adjacent Strait of Gibraltar.

On land, urban development and coastal infrastructure, including the expansion of residential areas, introduce additional pressures. Finally, education and research activities are ongoing in the area, including regular monitoring and ecological surveys using remotely operated vehicles (ROVs), diving operations, and academic partnerships.

The spread of non-indigenous species is another growing threat. The invasive Japanese algae *Rugulopteryx okamurae* is rapidly colonising coralligenous habitats along the southern Iberian Peninsula, impacting benthic communities. One of the most significant ecological impacts observed in the DS is the decline of vulnerable demersal species, leading to trophic imbalances. Recreational fishing continues to exert strong pressure on reef fish and invertebrates.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Future industrial projects pose additional threats in the DS. Planned offshore wind farms and hydrogen production facilities by BlueFloat Energy could further degrade benthic communities and potentially affect migratory species.

C. Pitiusas Islands

The Pitiusas Islands DS hold significant ecological value due to their high biodiversity and the favourable conservation status of key ecosystems, such as *Posidonia oceanica* meadows (see Table 25). Protection measures implemented in the area have contributed to the recovery of fish stocks, with observed increases in the size and abundance of vulnerable species. The predominant habitat of the Pitiusas Islands, seagrass meadows, not only provides essential coastal protection but also plays a vital role in enhancing blue carbon sequestration.

***Table 25**. Relative importance of taxonomic groups and habitats in Pitiusas Islands demonstration site. The colour scale indicates the relative importance.*

Taxonomic group		Species
Plant/Algae	●	*Posidonia oceanica, Cymodocea nodosa, Cystoseira spp*
Fish	●	*Epinephelus marginatus, Sciaena umbra, Seriola dumerili*
Bird	●	*Puffinus mauretanicus,Phalacrocorax aristotelis, Ichthyaetus audouinii*
Invertebrate	●	*Palinurus elephas, Pinna nobilis, Paracentrotus lividus*
Mammal	●	*Tursiops truncatus, Globicephala melas, Balaenoptera physalus, Physeter macrocephalus*
Reptile	●	*Carreta carreta*
Habitat		
Pelagic	●	Open waters of the Ibiza-Formentera channel
Coastal soft bottom Seagrass meadow	●	*Posidonia oceanica*, *Cymodocea nodosa*
Coastal hard bottom	●	Submerged cliffs, marine caves
Coastal hard bottom reefs	●	Coralligenous communities, rocky bottoms
Coastal soft bottom	●	Sandy and muddy bottoms
Deep sea	●	Continental slope, submarine canyons
Legend		
● high importance ● moderate to high importance	● medium importance ● low importance	● very low importance

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Tourism and leisure are major uses of the coastal and marine areas in the Pitiusas Islands (see Figure 25). The DS is characterized by the presence of numerous marinas, beach facilities, mooring areas, and hotels, with high seasonal pressure, particularly in summer. During the peak season, there is a marked increase in boating, diving, snorkelling, and water sports, leading to intensified impacts on marine habitats.
Fishing activities also have a high occurrence in the area. Professional and artisanal fishing represent key traditional practices, while recreational fishing is widespread, especially in coastal zones.

Maritime transport includes regular ferry routes, recreational boating, and local passenger and supply transport. Anchoring is a common practice, especially during summer months, and often takes place in sensitive seagrass meadows, posing a threat to these priority habitats. Coastal urbanization is evident, particularly around Ibiza town and major tourist resorts. The area is served by wastewater treatment plants, although there are historical concerns related to discharges of untreated wastewater. Occasional dredging operations are carried out in ports and marinas to maintain navigability.

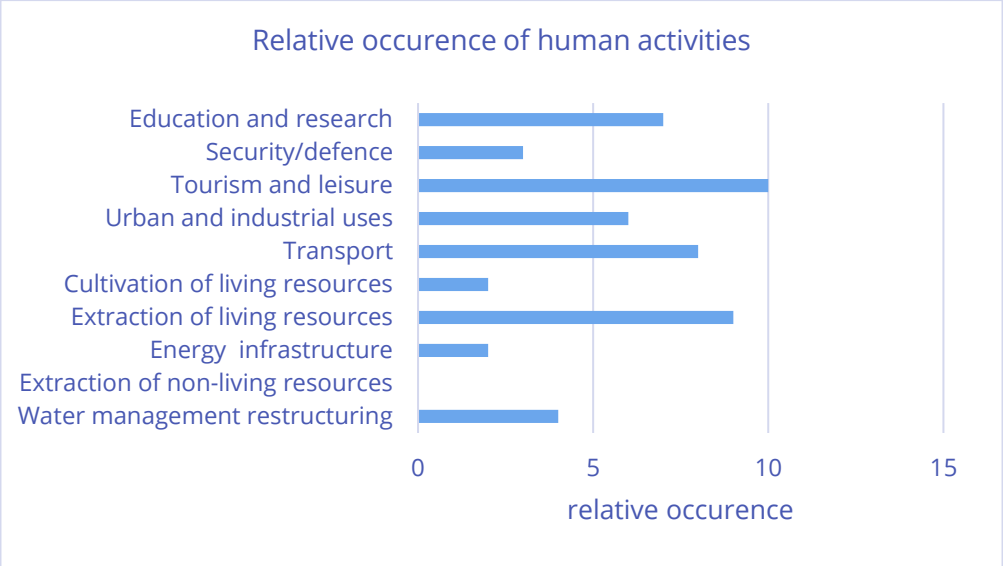


Figure 25. *Bar chart illustrating the relative occurrence of uses and human activities within Pitiusas Islands demonstration site. Values are ranked on a scale from 0 = lowest occurrence to 10 = highest occurrence.*

Naval presence or military exercises occur sporadically, but their impact is considered low. Finally, the DS hosts numerous ongoing research and monitoring programs, along with environmental education activities, supporting improved understanding and awareness of local marine ecosystems.

Several environmental impacts have been recorded at the DS, with marine vegetation degradation being the most critical. In particular, *Posidonia oceanica* meadows are severely threatened by anchoring activities, coastal development, and water pollution.

Anchoring and dredging also negatively affect the quality of key spawning and nursery habitats, reducing their ecological function. In addition, the use of certain

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

fishing gears has a direct impact on hard-bottom areas and coralligenous communities, contributing to habitat degradation.

Marine litter, especially plastics, represents a major threat to marine fauna in the area. Overexploitation of fish stocks continues to be a concern, despite ongoing management efforts. Finally, episodes of eutrophication are observed near urban centers and harbours, largely due to nutrient runoff and insufficient wastewater treatment.

D. Cetacean Migration Corridor

The DS is an ecological corridor for cetaceans, and its main aim is to enhance the conservation of cetaceans (see Table 26).

***Table 26**. Relative importance of taxonomic groups in the Cetacean Migration Corridor demonstration site. The colour scale indicates the relative importance.*

Taxonomic group		Species
Mammal	●	*Balaenoptera physalus; Tursiops truncatus; Delphinus delphis; Globicephala melas; Grampus griseus; Physeter macrocephalus; Ziphius cavirostris*
Reptile	●	*Caretta caretta; Dermochelys coriacea*
Fish	●	Shark and ray species
Bird	●	
Legend		
● high importance ● moderate to high importance	● medium importance ● low importance	● very low importance

Maritime transport is the most important activity occurring in the demo site (see Figure 26) and primarily consist of cargo shipping, passenger vessels, and oil tankers. The extraction of living resources mainly involves trawling, surface longlining, and purse seining. Another use of the area is the presence of gas pipelines and communication and electricity cables. Although less frequent, the site is also used by tourists for recreational boating and fishing. Additionally, some areas within the site are designated for military exercises.
Biological pressure is the most significant at the DS. It represents mainly the extraction and mortality of wild species. At the demo site, major concerns are boat collisions involving whales, bycatch affecting bottlenose and striped dolphins as well as loggerhead turtles, and the removal of prey species through commercial fishing. Physical pressures are primarily related to disturbances of the seabed. While substances, litter, and energy-related pressures stem mainly from anthropogenic noise generated by dense maritime traffic and fishing sonar. Additional impacts result from entanglement and ingestion of plastic debris, along with the release of sewage, oil, and other pollutants.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

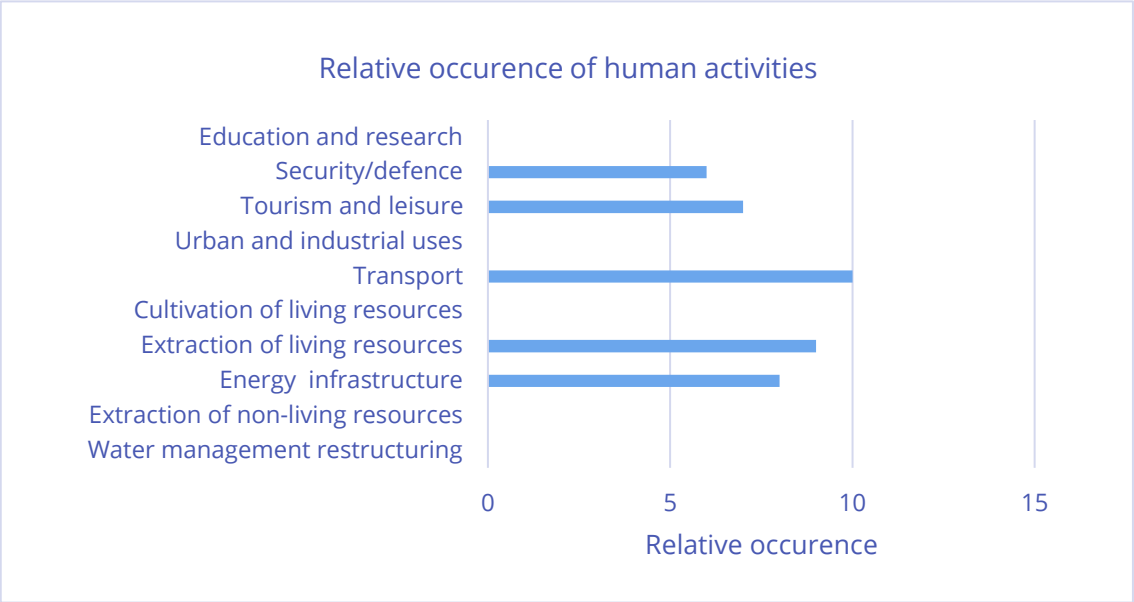


Figure 26. *Bar chart illustrating the relative occurrence of uses and human activities within the Cetacean Migration Corridor demonstration site. Values are ranked on a scale from 0 = lowest occurrence to 10 = highest occurrence.*

Several potential and anticipated developments within the Cetacean Migration Corridor are expected to exert varying levels of pressure on the marine environment and cetacean populations. Activities considered to have a low impact include the development of wind farms close to the DS and the installation of new electric cables, both of which generate anthropogenic noise during their respective construction and installation phases.
Medium impact activities comprise the construction of hydrogen pipelines, which also produce significant anthropogenic noise during the building phase. Moreover, climate change is expected to alter marine productivity, encourage the spread of opportunistic species, and affect prey availability for cetaceans. Larger impacts relate to the increase of vessel presence, increase vessel velocity and noise disturbance.

E. L'Albera

The DS is particularly significant for protection and conservation measures due to its seagrass meadows and hard-bottom reef habitats (see Table 27).

The demo site is subject to a significant recreational fishing, particularly spearfishing, alongside substantial angling activity from the shore (see Figure 27). While historical illegal moorings have caused damage to seagrass meadows, leading to the deterioration of spawning and nursery habitats for marine species. Efforts are underway to remove them progressively. At present, anchoring represents a major pressure on the ecosystem.

Biological pressures at the demo site include the possible spread of non-indigenous and invasive species (e.g., *Caulerpa spp.*, *Rugulopteryx okamurae*), that are present in nearby areas, as well as the occurrence of pathogens that have severely impacted the noble pen shell (*Pinna nobilis*) population in all the Mediterranean Sea.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 27. *Relative importance of taxonomic groups and habitats in L'Albera demonstration site. The colour scale indicates the relative importance.*

Taxonomic group		Species
Mammal	●	*Tursiops truncatus;*
Reptile	●	*Caretta caretta*
Plants/Algae	●	*Posidonia oceanica;* *Zostera noltii*
Fish	●	
Invertebrates	●	
Habitat		
Coastal soft bottom seagrass meadow	●	*Posidonia oceanica; Zostera noltii*
Coastal hard bottom reef	●	
Coastal soft bottom	●	
Legend		
● high importance ● moderate to high importance	● medium importance ● low importance	● very low importance

In recent years, the site has also been the focus of various research, monitoring, and educational initiatives. These include trials for replanting Neptune seagrass (*P. oceanica*) shoots, the installation of larval collectors for the critically endangered noble pen shell, as well as beach clean-ups and citizen science projects.
Litter, and energy related pressures are present as well, primarily due to large marine debris such as abandoned mooring blocks, and the input of anthropogenic noise from heavy recreational boat traffic during the summer months.

Several current and anticipated activities in and around L'Albera DS are expected to exert differing degrees of impact on the local environment. Among the low impact developments is the planned construction of a new offshore wind farm, which is expected to have minimal effects due to its significant distance from the DS.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

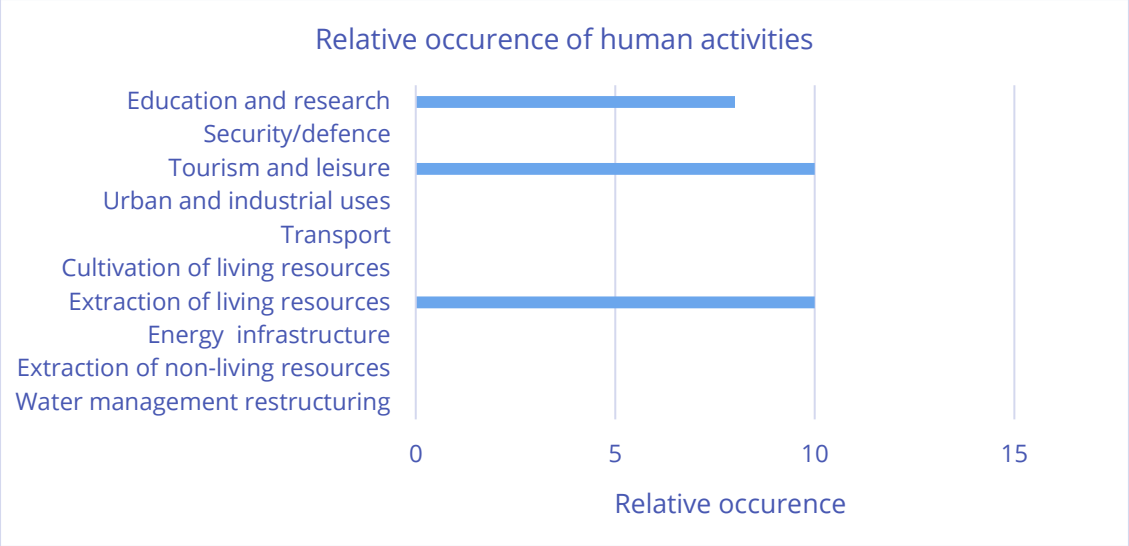


Figure 27. *Bar chart illustrating the relative occurrence of uses and human activities within L'Albera demonstration site. Values are ranked on a scale from 0 = lowest occurrence to 10 = highest occurrence.*

Despite this, it faces a strong opposition from the local community. Activities classified as having a medium impact include ongoing construction near the site, which may lead to increased nutrient and pollutant runoff into the coastal environment, potentially affecting water quality and marine life. High impact pressures include projected changes in climate conditions, which could disrupt native species and alter the overall ecosystem balance. Additionally, the potential introduction and establishment of invasive species pose a serious threat to local biodiversity and could undermine the ecological functioning of the area.

F. Italian Northern Adriatic

In addition to the coastal hard-bottom habitat, mammals, reptiles, and bird species are of key importance within the DS (see Table 28).

Table 28. *Relative importance of taxonomic groups and habitats in the Italian Northern Adriatic demonstration site. The colour scale indicates the relative importance.*

Taxonomic group		Species
Mammal	●	*Tursiops truncatus;*
Reptile	●	*Caretta caretta*
Bird	●	*Ichthyaetus melanocephalus; Gulosus aristotelis; Puffinus yelkouan*
Habitat		
Coastal hard bottom	●	*Reefs*
Legend		
● high importance ● moderate to high importance	● medium importance ● low importance	● very low importance

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Transport is the predominant activity within the DS, followed by research, surveys, and educational initiatives (see Figure 28). Anthropogenic noise from shipping is likely to represent a significant pressure on the site; however, this pressure is currently not addressed through any monitoring activities. Hydraulic dredge fishing is permitted in certain areas of the DS, although it is worth noting that this activity has recently ceased due to the combined effects of climate change (e.g., heatwaves, mucilage events) and declining target species populations. Evidence of anchoring is frequently observed during ongoing monitoring efforts, including visible anchor scars and abandoned anchors. Regarding the frequency of use by recreational boaters and fishers, no data are currently available to estimate the intensity of these activities or their potential impacts.

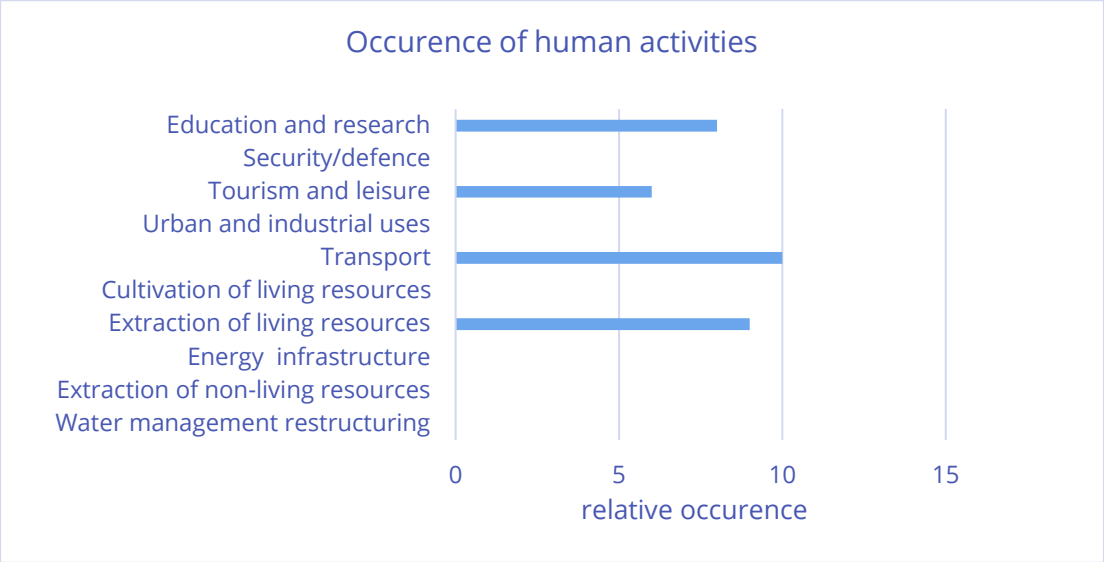


***Figure 28**. Bar chart illustrating the relative occurrence of uses and human activities within the Italian Northern Adriatic demonstration site. Values are ranked on a scale from 0 = lowest occurrence to 10 = highest occurrence.*

G. Burgas Bay

The DS contains several key features of conservation importance, including plant species, invertebrates, mammals, and fishes. Seagrass meadows and pelagic habitats also have a significant role in the area in term of conservation importance (see Figure 28).

The most significant uses of the DS include military operations, waste treatment and disposal, as well as urban and industrial activities (see Figure 29). The site is experiencing notable degradation, particularly in eutrophicated coastal areas, heavily polluted zones, and marine vegetation. Benthic communities on both hard and soft substrates are also being adversely affected.
Other key activities impacting the area include tourism and leisure infrastructure, anchoring, shipping, dredging. The harvesting of fish and shellfish, including illegal fishing practices such as trawling and dragging, actively contributes to the

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

overexploitation of fish stocks and the degradation of nesting habitats and spawning grounds. The site is subject to multiple and overlapping uses.

***Table 29**. Relative importance of taxonomic groups and habitats in Burgas Bay demonstration site. The colour scale indicates the relative importance.*

Taxonomic group		Species
Mammal	●	*Tursiops truncatus; Phocoena phocoena*
Invertebrates	●	*Ostrea edulis; Donax trunculus; Chamelea gallina; Mytilus galloprovincialis*
Fish	●	Syngnathidae; Mugilidae; *Scophthalmus maximus*; *Alosa immaculata*; *Alosa tanaica*
Plant/Algae	●	*Zostera sp.; Ruppia maritima*
Habitat		
Coastal soft bottom seagrass meadow	●	
Pelagic	●	
Legend		
● high importance ● moderate to high importance	● medium importance ● low importance	● very low importance

Additional uses comprise aquaculture, as well as research and surveys, coastal defense and flood protection, and the use of seawater for salt production.

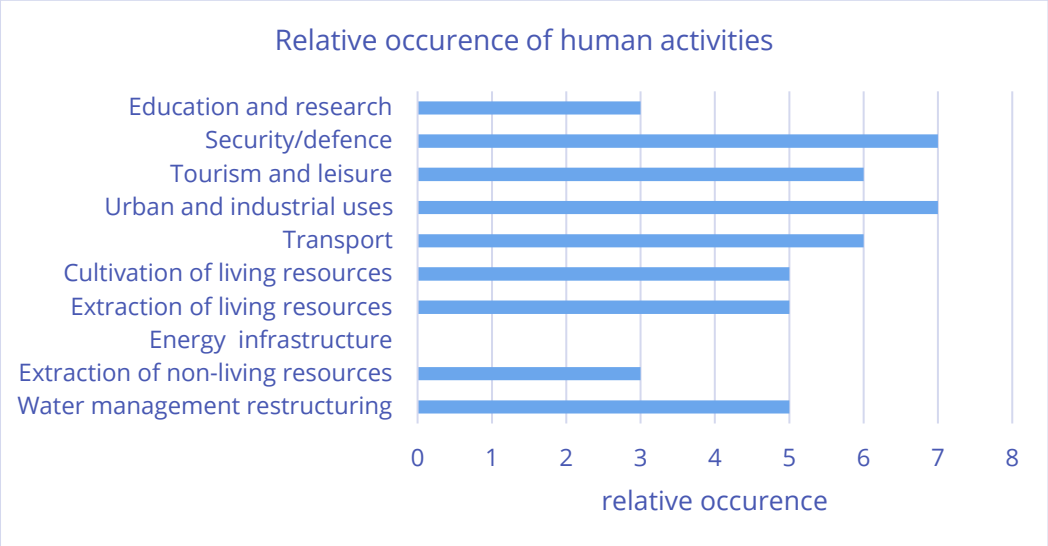


***Figure 29**. Bar chart illustrating the relative occurrence of uses and human activities within Burgas Bay demonstration site. Values are ranked on a scale from 0 = lowest occurrence to 10 = highest occurrence.*

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

A number of evolving and anticipated pressures are expected to affect the environment in and around the DS, with impacts varying in scale and severity. Among the medium impact factors, projected changes in climate conditions may disrupt native species and alter ecosystem dynamics. High impact pressures include planned coastal urban development near the DS, which is likely to lead to increased pollution and eutrophication, potentially degrading water quality and affecting marine ecosystems. Furthermore, the construction of new infrastructure and the rise in illegal fishing activities are expected to have detrimental effects on the seabed, posing serious risks to benthic habitats and associated biodiversity.

H. Central Romanian Coast

Several taxonomic groups are of great interest in the Central Romanian Coast DS, including plants, birds, mammals and fishes. In addition, coastal hard and soft bottom are also key features of conservation interest (see Table 30).

Coastal defence and flood protection, tourism and leisure activities, infrastructure development, and military operations are the most significant activities occurring at the DS (see Figure 30).
Other important uses include modifications to seabed morphology, shipping and transport infrastructure, urban development, and waste treatment and disposal. Less significant activities include research, surveys, educational activities, aquaculture, and mineral extraction.

Table 30. *Relative importance of taxonomic groups and habitats in Central Romanian site demonstration site. The colour scale indicates the relative importance.*

Taxonomic group		Species
Mammal	●	
Plant/Algae	●	*Gongolaria barbata; Zostera noltei*
Fish	●	
Bird	●	
Habitat		
Coastal soft bottom seagrass meadow	●	*Zostera noltei*
Coastal soft bottom	●	
Coastal hard bottom	●	*Gongolaria barbata*
Legend		
● high importance ● moderate to high importance	● medium importance ● low importance	● very low importance

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

The most significant impacts are the degradation of ecosystems in highly polluted coastal areas and the deterioration of marine vegetation and benthic communities on hard-bottom habitats. Less significant impacts include the degradation of ecosystems in eutrophicated coastal areas, as well as the deterioration of nesting, spawning, and nursery habitats for marine species.

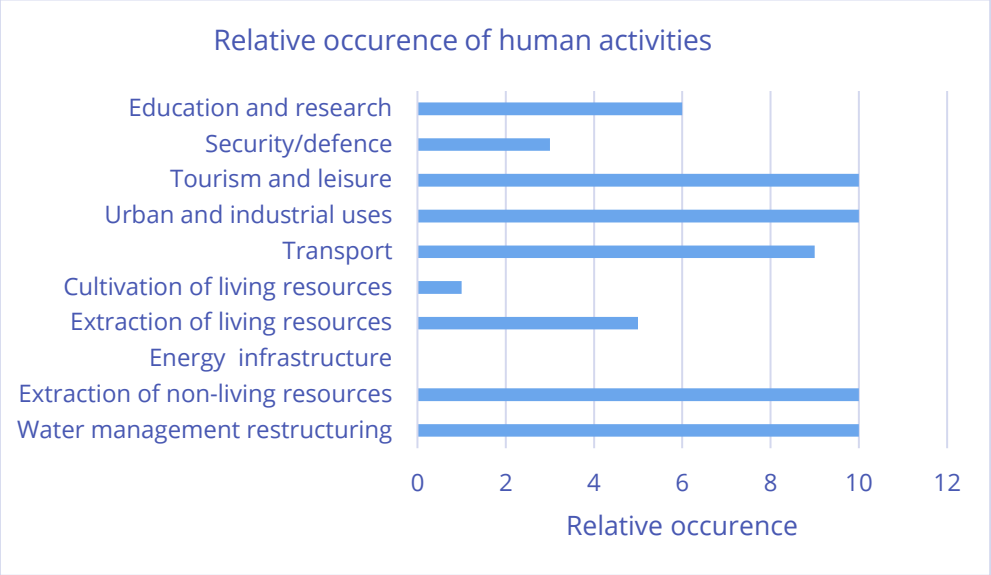


***Figure 30**. Bar chart illustrating the relative occurrence of uses and human activities within Central Romanian Coast demonstration site. Values are ranked on a scale from 0 = lowest occurrence to 10 = highest occurrence.*

A range of human activities is expected in the future to exert varying pressures on the DS. Low impact activities include aquaculture, which is considered to have limited environmental effects. Medium impact pressures involve oil and gas extraction and the development of related infrastructure, which may cause moderate disturbance to the surrounding environment.

I. Raet National Park

In this DS, fish are a key feature of conservation interest, followed closely by invertebrates and birds. Habitats of moderate conservation importance include soft-bottom habitats, seagrass meadows, kelp and shell sand (see Table 31).

The extraction of living resources in the DS primarily involves both recreational and professional fishing (see Figure 31). The harvesting of lobsters, crabs, and crawfish holds cultural significance in the area. Hunting is also practiced, though its extent is unknown and is assumed to be limited, primarily targeting seabird species.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 31. *Relative importance of taxonomic groups and habitats in Raet National Park demonstration site. The colour scale indicates the relative importance.*

Taxonomic group		Species
Fish	●	*Gadus morhua; Pollachius virens; Merlangius merlangus; Molva dypterygia; Melanogrammus aeglefinus; Brosme brosme; Lota lota; Pollachius virens; Scomber scombrus; Clupea harengus; Sprattus sprattus; Hippoglossus hippoglossus; Sebastes spp.; Merluccius merluccius; Anarhichas lupus; Pleuronectidae;* Selachimorpha; Batoidea.
Invertebrate	●	*Homarus gammarus; Cancer pagurus; Pandalus borealis; Nephrops norvegicus; Mytilus edulis; Ostrea edulis*
Bird	●	*Somateria mollissima; Larus argentatus; Larus canus; Larus marinus; Larus fuscus; Chroicocephalus ridibundus; Phalacrocorax carbo; Sterna hirundo.; Anas spp.; Anser spp.; Charadriiformes*
Plant/Algae	●	*Zostera spp.; Laminaria spp.; Saccharina spp.; Ascophyllum nodosum; Fucus spp*
Mammal	●	*Phoca vitulina; Phocoena phocoena*
Habitat		
Coastal soft bottom	●	Shell sand, shallow soft bottom areas
Coastal soft bottom Seagrass meadow	●	Zostera spp.
Coastal hard bottom	●	*Laminaria spp.; Saccharina spp.*
Legend		
● high importance ● moderate to high importance	● medium importance ● low importance	● very low importance

Seabed modification occurs through activities such as maintenance dredging and the construction of offshore structures. Key impacts observed in the DS include the degradation of marine vegetation, such as kelp decline, the degradation of benthic communities in hard-bottom habitats, and the overexploitation of fish stocks. Other notable impacts include the deterioration of spawning and nursery habitats for marine species, such as flatfish, as well as degraded ecosystems in highly polluted and eutrophicated coastal areas. Biological pressures also include as the spread of non-indigenous and invasive species (e.g. pacific oyster).

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

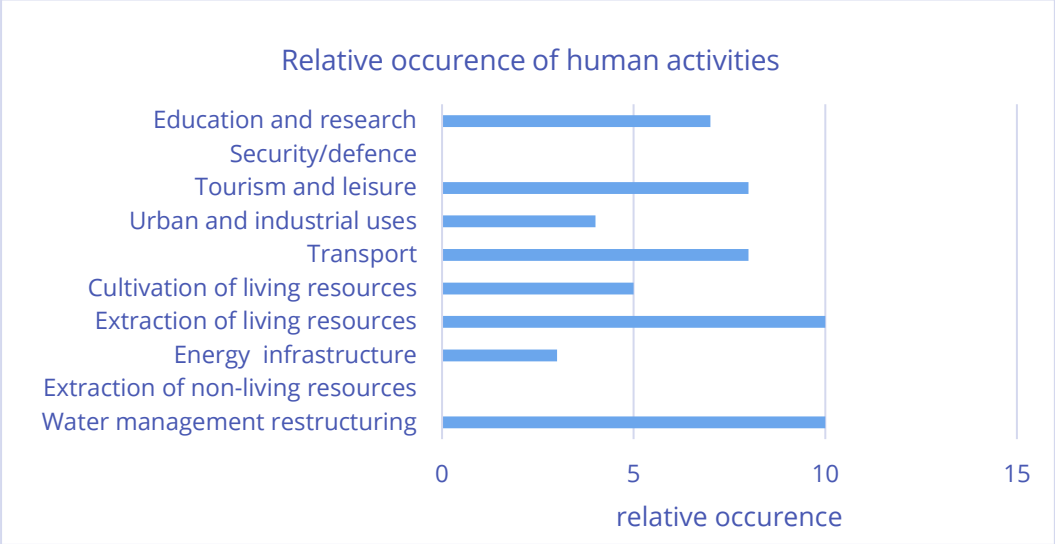


Figure 31. *Bar chart illustrating the relative occurrence of uses and human activities within Raet National Park demonstration site. Values are ranked on a scale from 0 = lowest occurrence to 10 = highest occurrence*

Agriculture and forestry are also present within the DS. In the terrestrial section of the national park, certain areas are managed extensively for grazing on uncultivated land, while intensive agricultural production is more common outside the park boundaries.

Transport activities in the area include small passenger ferries, fishing vessels, national and international cruise ships, and cargo transport involving both wet and dry bulk. Land and air transport are also present, particularly for emergency services and military operations. The site is used for various tourism-related infrastructures and activities, including campsites, public roads, mooring bolts for boats, sightseeing, diving, recreational fishing, swimming, motorboating, and festivals.

Substance, litter, and energy-related pressures in the area include spills and emissions of petroleum, oil, environmental toxins, and microplastics from sources such as sewage, wastewater, and urban runoff. Litter inputs mainly consist of lost fishing gear and floating marine debris.

Finally, the DS supports scientific research, with 14 different institutions conducting studies and projects in the area.

A range of planned and potential measures may influence the coastal and marine environment to varying degrees. Low impact actions include facilitating recreation and increasing tourism in the coastal zone, which, depending on the nature and scale of activities, could contribute to cumulative environmental pressures. Conversely, restricting construction within a 100-meter coastal buffer through more detailed regulation could help limit such impacts and support biodiversity, depending on how strictly exceptions are applied.

Among the medium impact measures, designating additional 'Zone A' areas to limit traffic, tourism, noise, and other disturbances is likely to benefit bird conservation.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Electrifying ferries by 2030 could further reduce carbon emissions and underwater noise, contributing positively to the coastal ecosystem. However, regional ambitions to develop aquaculture in or around the park may introduce moderate pressures, depending on the species farmed and the methods used.

High impact interventions, such as establishing no-take zones and imposing stricter fisheries restrictions, have the potential to greatly enhance ecosystem health. Meanwhile, ongoing climate change remains a significant concern, as it may disrupt native species and alter ecosystem dynamics.

J. Vlaamse Banken MPA: Hinder Banks

In the Vlaamse Banken, sandbanks and gravel beds represent the most important conservation features. Invertebrate species are also of notable importance (see Table 32).

The Vlaamse Banken DS hosts a wide range of human activities (see Figure 32). The extraction of living resources is primarily conducted through the professional harvesting of fish and shellfish. Beam trawl fishing is a mixed fishery that targets species such as plaice, sole, dab, turbot, and brill, and it typically results in substantial bycatch. Sand extraction causes physical impacts that are generally localized and limited in duration. However, in one area where extraction had ceased, no physical recovery was observed even nine years later.

Transport activities mainly consist of shipping and anchoring. Less frequent uses include the installation of offshore structures, modification of seabed morphology through dredging and material deposition, renewable energy generation, transmission of electricity and communications through cables, and aquaculture. The site is also used for military exercises, as well as for survey and research purposes.

Biological pressures include the spread of non-indigenous and invasive species, such as *Crepidula fornicata*, and the disturbance of species caused by human presence. Continuous noise and marine litter also exert pressure on the ecosystem. Additional pressures, though of lesser significance, include nutrient inputs from shipping, particularly nitrogen and sulfur compounds, impulsive anthropogenic noise, and direct discharges from radioactive facilities.

The most significant impacts at the DS include the degradation of benthic communities on hard substrates and the deterioration of spawning and nursery habitats. Other impacts involve the degradation of benthic communities in soft-bottom areas and the overexploitation of fish stocks.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

***Table 32**. Relative importance of taxonomic groups and habitats in Vlaamse Banken MPA: Hinder Banks demonstration site. The colour scale indicates the relative importance.*

Taxonomic group		Species
Invertebrate	●	*Ostrea edulis;Sabellaria spinulosa; Spirobranchus triqueter; Alcyonidium spp.; Flustra foliacea; Alcyonium digitatum; Mytilus edulis; Buccinum undatum; Majidae spp. Haliclona (Haliclona) oculata; Lanice conchilega; Macoma balthica;Abra alba, Nephtys cirrosa; Ophelia borealis; Aphrodite aculeata; Chaetopterus variopedatus; Branchiostoma lanceolatum; Corystes cassivelaunus; Dosinia exolete; Echinocardium cordatum; Glycymeris glycymeris; Laevicardium crissum; Lagis koreni; Lutraria lutraria; Mya spp.;Owenia fusiformis; Venerupis corrugata*
Mammal	●	*Phocoena phocoena; Phoca vitulina; Halichoerus grypus*
Fish	●	*Clupea harengus: Gadus morhua; Pleuronectes platessa; Pegusa lascaris; Callionymus lyra;Agonus cataphractus;* Ammodytidae
Bird	●	*Podiceps cristatus;Gavia stellata;Hydrocoloeus minutus;Larus marinus;Larus fuscus;Thalasseus sandvicensis;Sternula albifrons;Sterna hirundo;Melanitta nigra*
Habitat		
Pelagic	●	
Coastal soft bottom	●	Sandbanks
Turf banks	●	
Offshore hard bottom	●	Gravel beds
Legend		
● high importance ● moderate to high importance	● medium importance ● low importance	● very low importance

Several planned developments and predicted changes are expected to exert medium to high impacts on the marine environment within the DS. Medium impact activities include the construction of cables and pipelines, which may lead to physical habitat loss, increased sedimentation, and disturbance during installation. Additionally, energy cables could emit electromagnetic fields that may affect sensitive marine species.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

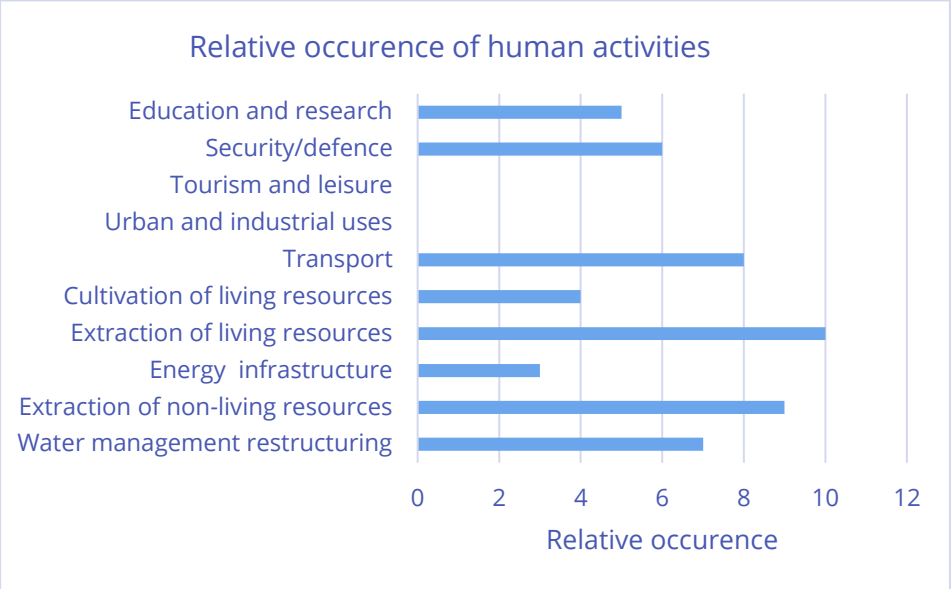


Figure 32. *Bar chart illustrating the relative occurrence of uses and human activities within the Vlaamse Banken MPA: Hinder Banks demonstration site. Values are ranked on a scale from 0 = lowest occurrence to 10 = highest occurrence.*

The construction of an energy island is also anticipated to reduce biodiversity through habitat degradation, changes in seabed morphology, extraction of seabed materials, and the generation of underwater noise. Furthermore, the development of a multi-use offshore wind farm combined with aquaculture operations may result in eutrophication, pathogen transmission, waste discharge, underwater noise, and further physical habitat loss.

On the high impact side, the implementation of bottom fisheries management measures, while aimed at restricting destructive practices, is expected to have a substantial positive impact by supporting habitat recovery and enhancing conservation efforts within the DS.

K. Scottish MPA Network

The DS focuses primarily on marine mammals' species as key conservation features. Mammals and fish are of particular importance (see Table 33).

The Scottish MPA Network DS is subject to a wide range of human activities within its perimeter (see Figure 33). One of the most significant is the extraction of living resources, primarily through professional fishing and shellfish harvesting, as well as fish processing. Bycatch, entanglement, and injury due to vessel collisions are all potential threats to marine mammals.

Recreational fishing also occurs, though to a lesser extent. Marine-based aquaculture and adjacent agricultural practices also influence the area. Transport represents another major use, particularly maritime shipping and oil transport, supported by infrastructure such as ports, and large and small harbours.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 33. *Relative importance of taxonomic groups in Scottish MPA Network demonstration site. The colour scale indicates the relative importance.*

Taxonomic group		Species
Mammal	●	*Phoca vitulina; Halichoerus grypus; Phocoena Phocoena, Orcinus orca, Balaenoptera acutorostrata, Megaptera novaengliae, Grampus griseus, Lagenorhynchus acutus, Lagenorhynchus albirostris, Tursiops truncatus*
Fish	●	
Legend		
● high importance ● moderate to high importance	● medium importance ● low importance	● very low importance

Tourism is also present, contributing to the site's multifaceted use. Other activities include seabed morphology restructuring, the installation of offshore structures, hydrocarbon extraction, renewable energy development, and electricity transmission.

Additionally, marine mammals may be impacted by entanglement in litter and ghost fishing gear, as well as ingestion of litter and microplastics. The input of anthropogenic noise is also a significant pressure. Although nutrient input and water discharge are present at the site, they are likely at levels that do not significantly affect marine mammals.

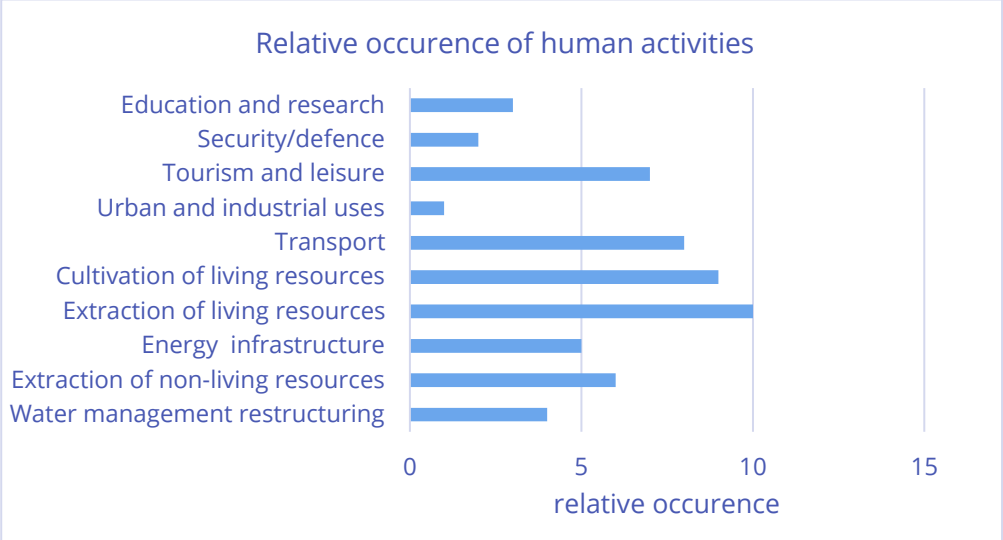


Figure 33*. Bar chart illustrating the relative occurrence of uses and human activities within Scottish MPA Network demonstration site. Values are ranked on a scale from 0 = lowest occurrence to 10 = highest occurrence.*

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

The DS is characterized by ecosystem degradation in highly polluted coastal areas and the collapse of sand eel stocks.

Futures changes in environmental pressures are expected to impact the area to varying degrees. Among the medium impact factors, climate change may lead to shifts in prey distribution, potentially affecting predator-prey dynamics. High impact activities include the development of offshore wind farms, which to generate both impulsive and continuous underwater noise, result in the loss of seabed habitat, disturb prey species, and lead to increased vessel traffic in the area.

Annex 4: Protection status and conservation objectives

A. Macaronesia

The Macaronesia DS consists of a collection of North Atlantic archipelagos, including the Azores, Madeira, Canary Islands, and Cape Verde. All of these are part of the Temperate Northern Atlantic Marine Realm, except for Cape Verde, which belongs to the Tropical Atlantic Marine Realm.

In the Azores, the Protected Areas Network was established[2] and integrates all the Protected Areas existing in the territory of the Autonomous Region of the Azores, defined according to the classification adopted by the International Union for Conservation of Nature (IUCN).

There are 30 sites classified as Resource Management Protected Areas (category VI, IUCN), focusing on sustainable resource use with fishing regulations. Five sites are designated as Nature Reserves, aiming to preserve unique habitats, while 12 sites are categorized under Habitats or Species Management to maintain biodiversity (category IV, IUCN). These sites are well established and benefit from active management (see Table 34).

Additionally, 15 sites are located within the Azores Marine Park, beyond the outer limit of the territorial sea. These sites form a single management unit established to achieve the following objectives:

(a) to implement measures aimed at protecting hydrothermal vents, seamounts, and other underwater features, as well as sensitive marine resources, communities, and habitats;
(b) to ensure the effective management of existing classified hydrothermal vents, seamounts, and other underwater structures, as well as those that may be designated in the future within the Azores archipelago and its surrounding areas.

Furthermore, seven sites are designated as marine protected areas under OSPAR to protect unique habitats such as seamounts. A Maritime Spatial Planning Situation

[2] Regional Legislative Decree No. 15/2012/A

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Plan (PSOEM) has been approved[3] in the Azores, applying to the entire maritime space under national sovereignty and/or jurisdiction.

Table 34. *Description of the type of MPA, protection status, and responsible management body for the Macaronesia (Azores) demonstration site.*

Type of MPA	Stage of establishment	Status of protection	Management body
EBSA	Actively managed	Highly to fully protected	The Regional Directorate for Maritime Affairs (Direção Regional dos Assuntos do Mar).

In Madeira, there are four Natural Reserves and one Natural Park (Parque Natural da Madeira). Several of these areas are also designated under the Habitats and Birds Directives. Ponta de São Lourenço holds both SAC and SPA status, as does the Desertas Islands Natural Reserve. The Natural Reserve of Rocha do Navio and the Natural Reserve of the Selvagens Islands are designated as SACs. The Network of Marine Protected Areas of Porto Santo is classified as a SPA. The sites are actively managed[4] (see Table 35). Madeira has an official maritime spatial plan, adopted[5] in 2019, as part of Portugal's national maritime spatial planning framework.

Table 35. *Description of the type of MPA, protection status, and responsible management body for the Macaronesia (Madeira) demonstration site.*

Type of MPA	Stage of establishment	Status of protection	Management body
EBSA	Actively managed	Moderate to highly protected	the Regional Directorate for Environment and Climate Change (Direção Regional do Ambiente e Alterações Climáticas).

In Cape Verde, there are 47 Protected Areas, which cover 18.3% of the national terrestrial territory but only 5.8% of it is in marine waters. In addition to these MPAs, the country has designated two UNESCO Biosphere Reserves (on the islands of Maio and Fogo) and four Ramsar sites. Spatial planning and management plans have been approved for 24 protected areas (51%), with an additional 8 currently under development. The MPAs include 5 Integral Nature Reserves, 4 Natural Parks, 2 Protected Landscapes, and 11 Natural Reserves. All MPAs are coastal, within 3 nautical miles, covering areas that are crucial to breeding and nesting grounds for sharks, seabirds, and turtles. However, the level of protection across most MPAs remains limited (see Table 36).

[3] (Azores) Resolution of the Council of Ministers No. 136/2024
[4] Access to the management plans: Planos de Ordenamento e Gestão (POG)
[5] (Madeira) Resolution of the Council of Ministers No. 203-A/2019

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 36. *Description of the type of MPA, protection status, and responsible management body for the Macaronesia (Cape Verde) demonstration site.*

Type of MPA	Stage of establishment	Status of protection	Management body
Individual MPA	Proposed to implemented	Lightly protected to highly protected	The National Directorate for Environment (Direção Nacional do Meio Ambiente DNA)

In the Canary Islands, there are 42 Natura 2000 sites, 3 Marine Reserves, and a Natural Park within the Network of Protected Natural Spaces. These MPAs are actively managed and benefit from a high level of protection, with well-developed regulatory frameworks and enforcement measures in place (see Table 38).

Table 37. *Description of the type of MPA, protection status, and responsible management body for the Macaronesia (Canary Island) demonstration site.*

Type of MPA	Stage of establishment	Status of protection	Management body
Individual MPA	Actively managed	Highly to fully protected	Department of Agriculture, Livestock, Fisheries, and Waters and the Ministry of Agriculture, Food, and Environment (MAGRAMA)

In the Azores part of the demo site, the Protected Areas of Resource Management have different conservation objectives (see Table 38). Conservation measures commonly involve restrictions on extractive and potentially disruptive activities. Fishing and collecting practices are typically regulated. Further limitations include the restriction on maritime-tourism activities, the introduction of invasive species, erosion and marine pollution.

Table 38. *Overview of conservation objectives associated with the Protected Areas of Resource Management in the Macaronesia (Azores) demonstration site.*

Conservation objectives	Protected Areas of Resource Management
Protect biodiversity and natural values, promote sustainable resource use, and contribute to regional sustainable development.	Protected Area of Resource Management of Corvo Coast
	Protected Area of Resource Management of the North Coast
	Protected Area of Resource Management of the Faial-Pico Channel (Faial Sector)
	Protected Area of Resource Management of Capelinhos
	Protected Area for Resource Management of Castelo Branco
	Protected Area of Resource Management of Cedros
	Protected Area of Resource Management of Caloura - Vila Franca do Campo islet
	Protected Area of Resource Management of the East Coast

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

	Protected Area of Resource Management of Ponta da Ferraria – Ponta da Bretanha
	Protected Area of Resource Management of Porto das Capelas - Ponta das Calhetas
	Protected Area of Resource Management of Ponta do Cintrão – Ponta da Maia
Preservation of habitats, ecosystems, and species in a favourable state; maintenance of ecological processes; protection of the structural features of the landscape, geological and geomorphological features.	Protected Area of Resource Management of the Faial-Pico Channel (Pico sector)
	Protected Area of Resource Management of Ponta da Ilha
	Protected Area of Resource Management of Porto das Lajes
	Protected Area of Resource Management of the Fajãs Coast
	Protected Area of Resource Management of the West Coast
	Protected Area of Resource Management of Entre Morros
	Protected Area of Resource Management of Topo
	Protected area of resource management of the Northwest Coast
	Protected Area of Resource Management of the Southeast Coast
	Protected area of Resource Management of Quatro Ribeiras
Protect the maintenance of biodiversity and natural values, promote effective management for sustainable resource use, and contribute to socio-economic sustainability.	Protected Area of Resource Management of Cinco Ribeiras
Protect the maintenance of biodiversity and natural values, promote sustainable management of resources, and contribute to socio-economic development.	Protected Area of Resource Management of Baixa da Vila Nova
	Protected Area of Resource Management of Costa das Contendas
	Protected Area of Resource Management of Cabras islets
	Protected Area of Resource Management of Monte Brasil
Protect biodiversity, natural values, and aesthetic qualities; promote sustainable resource use.	Protected Area of Resource Management of São Lourenço bay
	Protected Area of Resource Management of the North Coast
	Protected Area of Resource Management of the South Coast

The Natural Reserves of the Azores, including Caldeirinhas, Praia Islet, Baixo Islet, Vila Islet, and Formigas Islet, are located within the territorial sea and are designated to protect habitats, ecosystems, and ecological processes. These areas also safeguard geological and structural landscape features while promoting the conservation of biodiversity and sustainable use of marine resources. Additionally, these figures of protection support scientific research and the preservation of natural values. Each reserve is governed by specific management measures (see Table 39).

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 39. *Overview of the conservation measures associated with the Natural Reserves in the Macaronesia (Azores) demonstration site.*

Natural Reserves	Conservation measures
Caldeirinhas Natural Reserve	Restrictions on fishing, hunting, underwater fishing, waste deposit, seabed alteration, noise pollution, and commercial or non-commercial advertising.
Natural Reserve of the Praia Islet; Nature Reserve of the Baixo Islet	Restrictions on fishing and collecting marine species, illegal activities, maritime-tourism, water sports, invasive species, erosion, marine pollution, and noise pollution.
Natural Reserve of Vila Islet	Restrictions on geological collection, fishing, collecting specimens, introduction of invasive species, waste deposition. Prohibition of docking of vessels except for rescue operations.
Natural Reserve of Formigas Islet	Restrictions on spearfishing, collection of marine organisms, disturbance to birds, waste deposition. Specific fishing regulations for tuna vessels with continuous monitoring system (MONICAP)

The MPAs designated in the Azores serve a range of conservation objectives. Some areas are established to protect ornithological values, while others focus on pelagic species, such as rays, or aim to safeguard rare and sensitive ecosystems (see Table 40). The geographical scope of these MPAs varies considerably: certain sites, such as the Rainbow Hydrothermal Field Marine Reserve and the Marine Protected Area of the Meteor Submarine Archipelago, are located beyond 200 nautical miles on the extended continental shelf, whereas others fall within the EEZ of Portugal. Most management measures identified across the MPAs relate to the prohibition or regulation of extractive activities, such as fishing and geological sampling. Regulatory provisions also often include controls on pollution, including noise pollution, as well as tourism, maritime traffic, and scientific research. In some MPAs, measures concerning mineral exploitation and resource exploration are also foreseen.

Table 40. *Overview of conservation objectives associated with the Marine Protected Areas of the Macaronesia (Azores) demonstration site*

Conservation objectives	MPAs
Protect significant species, biotic communities, and physical characteristics of the marine environment; promote sustainable use and scientific research	Marine Protected Area of Atlair Submarine
	Marine Protected Area of Antialtair Submarine mount
Promote sustainable management and the protection of biodiversity, ecosystems, and species.	Marine Protected Area of Condor Bank
Promote sustainable resource management and protect biodiversity in the area.	Marine Protected Area of D-João Castro Bank
	Marine Protected Area MARNA
Protect and conserve diverse habitats and species in the Meteor Submarine Archipelago, including rare, vulnerable, and sensitive ecosystems.	Marine Protected Area of Meteor submarine archipelago
	Marine Protected Area of Meteor Archipelago

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Protect and conserve the marine habitats and species of the Corvo area, with a focus on seabird populations	Marine Protected Area of Oceânica do Corvo
Protect marine habitats and species, particularly seabirds	Marine Protected Area of Oceânica do Faial
Protect and conserve pelagic habitats and species	Marine Protected Area of Princess Alice Bank
Conserve biodiversity, protect habitats and ecosystems, and promote sustainable use of resources, particularly fishery resources, and prevent undue disruption from extractive activities	Marine Protected Area of protection perimeter localized at Southwest of Azores
	Marine Protected Area Of the protection perimeter localized at southwest of Azores
	Marine Protected Area of protection perimeter localized at Southwest of Azores
Preserve habitats, ecosystems, and species in a favorable state, maintain ecological processes, and protect geological features	Rainbow Hydrothermal Field Marine Reserve
Conserve and restore natural habitats, protect biodiversity, and regulate sustainable activities. Recognizes the rarity, ecological value, and productivity of its unique habitats, supporting endangered species. Promotes scientific research and environmental education.	Marine Protected Area of D.João de Castro Bank
Conservation of hydrothermal vent ecosystems, including rare and ecologically significant habitats. Protects structural features of the marine landscape and promotes sustainable scientific and economic activities	Natural Marine Reserve of Lucky Strike
	Marine Protected Area of Hydrothermal camp Menez-Gwen
Marine Protected Area of Seldo Submarine Mount	Conservation of seamount ecosystems, protection of vulnerable habitats, promotion of scientific research, and safeguarding biodiversity

In Madeira, the two regional parks, Cabo Girão Marine Natural Park and the Marine Natural Park of Ponta do Pargo, are designated to protect marine biodiversity, preserve geological heritage, and maintain essential ecosystem services. Cabo Girão places particular emphasis on balancing tourism and recreational activities with the protection of ecological and geological values. In contrast, the Marine Natural Park of Ponta do Pargo focuses on the conservation of cultural heritage and the preservation of the region's distinctive landscape. The Natural Reserves and MPAs designated under the Birds and Habitats directives have different conservation objectives (see Table 41).

Table 41. *Overview of conservation objectives associated with Natural Reserves and sites designated under the Birds and Habitats Directives in the Macaronesia (Madeira) demonstration site.*

Conservation objectives	MPAs
Conservation of natural values and processes, protection of endangered and endemic marine species	Garajau Partial Natural Reserve
Protection and conservation of natural, landscape, and cultural values	Ponta de São Lourenço SAC/SAC
	Natural reserve of Rocha do Navio – SAC Viúva islets

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

integrated with a sustainable management strategy	Network of Marine Protected Areas of Porto Santo SPA
	Desertas Islands Natural Reserve – SPA/SAC
Protection and conservation of ecological processes, systems, and habitats to maintain biodiversity	Natural Reserve of Selvagens islands SAC
Protection of marine mammals in the coastal zone	Site of Community Importance

In Cape Verde, MPAs are designated with varying conservation objectives (see Table 42). MPAs established to protect the entirety of the ecosystem are designated as no-take zones. Other MPAs are subject to tailored conservation measures, which may include regulations on fishing, tourism, and other human activities that could disturb marine species or degrade their habitats.

Table 42. *Overview of conservation objectives associated with marine protected areas in the Macaronesia (Cape Verde) demonstration site.*

Conservation objectives	MPAs
Protection of the totality of the ecosystem, with all its components, as well as the prevention of human occupation other than for scientific or, possibly, educational purposes	Integral Natural Reserve Ilhéus Branco e Raso; Integral Natural Reserve Ilhéu Baluarte; Integral Natural Reserve Ilhéu Curral Velho; Integral Natural Reserve Ilhéu dos Pássaros; Integral Natural Reserve Ilhéus do Rombo
Protecting a unique habitat and promoting community integration in the co-management of its environment and resources, as well as the development of sustainable alternative forms of income	Marine Natural Park Cruzinha
Conservation of species, habitats and ecological processes, to improve the living conditions of the local population, as well as people's access to the respective areas for recreational, spiritual, educational or scientific purposes, taking into account conservation objectives	Natural Park do Norte; Natural Park do Norte da ilha do Maio; Natural Park da Baia do Inferno e do Monte Angra
Protection of a concrete natural resource, whether a species, a group of species or a habitat	Natural Reserve Casas Velhas; Natural Reserve Baía da Murdeira; Natural Reserve Costa da Fragata; Natural Reserve de Santa Luzia; Natural Reserve Lagoa do Cimidor; Natural Reserve Morro de Areia; Natural Reserve Ponta de Sinó; Natural Reserve Ponta do Sol; Natural Reserve Praia de Morro; Natural Reserve Serra Negra

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

A landscape of aesthetic quality or cultural value that merits conservation, with protection centered on maintaining and restoring the aesthetic and cultural features that define them	Protected Landscape Buracona-Ragona; Protected Landscape Salinas do Porto Inglês

In the Canary Islands, the conservation objectives of the sites designated as SACs focus on habitats such as: Reefs (Habitat type code 1170), submerged or semi-submerged caves (Habitat type code 8330), sandbanks (Habitat type code 1110), thermomediterranean riparian flora caves (Habitat type code 5330), and cliffs with vegetation specific to the Macaronesian coasts (Habitat type code 1250). They also target species such as *Caretta caretta*, *Tursiops truncatus*, and *Chelonia mydas* (see Table 43).
The SPAs focus on bird species including *Bulweria bulwerii*, *Calonectris diomedea*, and *Puffinus baroli*. Conservation measures in these MPAs include restrictions on fishing and collecting, monitoring, and public awareness campaigns.

Marine reserves of fishing interest are established in specific areas with significant fishing and ecological value to serve as protection for the reproduction and breeding of species important for fishing. This facilitates resource recovery and contributes to achieving sustainable exploitation. The marine reserves are located in La Graciosa (Lanzarote), La Restinga (El Hierro) and the marine reserve La Palma is located entirely in offshore waters.

Table 43. *Overview of conservation objectives associated with MPAs in the Macaronesia (Canary Islands) demonstration site.*

Conservation objectives	MPAs
Ensure the long-term survival of Europe's most threatened species and natural habitats, contributing to halting the loss of biodiversity caused by the adverse impact of human activities	Marine space of the east and south of Lanzarote- Fuerteventura (SCI); Sebadales de La Graciosa (SAC); Los Jameos (SAC); Sebadales de Guasimeta (SAC); Cagafrecho (SAC); Sebadales de Corralejo (SAC); Leeward Beach of Jandía (SAC); Cueva de Lobos (SAC); Bahía del Confital (SAC); Marine area of La Isleta (SAC); Bahía de Gando (SAC); Playa del Cabrón (SAC); Sebadales de la Playa del Inglés (SAC); Franja marina de Mogán (SAC); Costa de Los Órganos (SAC); Franja marina Santiago-Valle del Gran Rey (SAC); Franja marina de Teno-Rasca (SAC); Costa de San Juan de la Rambla (SAC); Cueva marina de San Juan (SAC); Sebadales del Sur de Tenerife (SAC); Sebadal de San Andrés (SAC); Sebadales de Antequera (SAC); Costa de Sardina del Norte (SAC); Sebadales de Güigüí (SAC)
Preservation of habitats, ecosystems, and species in a favorable state; maintenance of ecological processes; protection of the	Mar de las Calmas (SAC); Costa de Garafía (SAC); Franja marina de

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

structural features of the landscape, geological and geomorphological features.	Fuencaliente (SAC); Espacio marino de la zona occidental de El Hierro (SPA)
Ensure effective protection of all birds in the wilds by protecting, conserving and restoring a) Safeguarding the habitats of migratory birds and certain particularly threatened birds b) Preserving the environmental conditions required for the rest, reproduction and feeding of birds	Banco de la Concepción (SPA); Espacio marino de los Roques de Salmor (SPA); Espacio marino del norte de La Palma (SPA); Espacio marino de La Gomera –Teno (SPA); Espacio marino de los acantilados de Santo Domingo y Roque de Garachico (SPA); Espacio marino del Roque de la Playa (SAP); Espacio marino de Anaga (SPA); Espacio marino de Mogán-La Aldea (SAP); Espacio marino de La Bocayna (SPA); Espacio marino de los Islotes de Lanzarote (SPA); Islotes del norte de Lanzarote y Famara (SPA);
Protect biodiversity and natural values, promote sustainable resource use, and contribute to regional sustainable development.	Parque Natural del Archipiélago Chinijo; Reserva marina del entorno de la isla de La Graciosa e islotes del norte de Lanzarote (SAC/SPA); Reserva marina de la isla de La Palma
Guarantee the conservation and exploitation of fishery resources existing on the sparse marine platform of the El Hierro Island.	Punta de la Restinga- Mar de las Calmas Marine Reserve (SAC/SPA)

B. Cabo Roche

The Cabo Roche DS encompasses two MPAs: the Site of Community Importance (SCI) "Western Strait", designated in 2024 as part of the Natura 2000 network, and the proposed Cabo Roche Marine Reserve of Fishing Interest, promoted since 2010 by the artisanal fishing sector of Conil (see Table 44). Located in Spain's territorial waters near the Strait of Gibraltar, the DS falls within the Lusitanian Marine Province.

Table 44. *Description of the type of MPA, protection status, and responsible management body for Cabo Roche demonstration site.*

Type of MPA	Stage of establishment	Status of protection	Management body
Individual MPA	Designated and proposed	Lightly protected	Ministry for Ecological Transition and the Demographic Challenge

Activities inside and outside the MPA are regulated by an MSP[6] and by the implementation of the MSFD[7].

The SCI 'Western Strait' spans 200,799 ha of high ecological value and was designated to conserve rocky reefs, coralligenous assemblages, benthic communities dominated by Paramuricea spp., Eunicella spp., Cystoseira spp., as well as migratory

[6] (Spain) Royal Decree 125/2023

[7] (Spain) Royal Decree 957/2018

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

elasmobranchs. While the site currently lacks an approved management plan and formal conservation objectives, technical proposals developed under the ecological transition plan and monitoring by the (Instituto Español de Oceanografía) IEO under INFRAROC have identified priority habitats and species to guide future conservation goals.

C. Pitiusas Islands

The Pitiusas Islands DS is located in the southwestern area of the Balearic Islands in the Western Mediterranean Marine Ecoregion. It encompasses a diverse and interconnected network of MPAs, including 12 Natura 2000 sites, both SACs and SPAs, five Marine Reserves of Fishing Interest, three Natural Reserves, and one Natural Park. Some of these MPAs extend beyond Spanish national waters, with management responsibilities shared between national and regional authorities (see Table 45).

Table 45. *Description of the type of MPA, protection status, and responsible management body for Pitiusas Islands demonstration site.*

Type of MPA	Stage of establishment	Status of protection	Management body
Large Network MPA	Implemented	Lightly protected to highly protected	• Regional government (CAIB, Conselleria de Medi Ambient, Conselleria de Pesca) • Ministry for Ecological Transition and the Demographic Challenge • Co-management tables and Fisheries co-management tables

The Marine Reserves of Fishing Interest are established primarily to conserve and restore fishery resources and associated habitats. They implement spatial and temporal restrictions to support the recovery of overexploited stocks and improve ecosystem health. The Ses Salines Natural Park[8] of Ibiza and Formentera, which protects coastal, lagoon, and marine ecosystems, is one of the most prominent protected areas in the region; its management plan was updated in 2021. Natural Reserves within the DS safeguard areas of high ecological and landscape value.
Most MPAs in the DS benefit from an official designation and are supported by active management instruments. However, a few sites are in the process of updating or revising their management plans to better reflect current conservation priorities.

Within the Natura 2000 network, *Posidonia oceanica* meadows are a key conservation priority, given their ecological importance as nursery habitats and their role in maintaining water quality and carbon sequestration. Other conservation targets include migratory and resident bird species, coastal wetlands, and salt marshes. All

[8] (Spain) Law 17/2001

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

essential for sustaining biodiversity, supporting bird populations, and maintaining vital ecosystem services.

Outside the boundaries of the MPAs, human activities are regulated through a combination of regional spatial planning tools, sectoral regulations (e.g., for fisheries and tourism), and the Balearic MSP. In addition, the Balearic Posidonia Decree [9]establishes a robust legal framework for the protection of *Posidonia oceanica* meadows. This decree prohibits harmful activities such as uncontrolled anchoring, trawling, aggregate extraction, dumping of dredged material, and the development of new aquaculture facilities or submarine outfalls on *Posidonia* beds. It also includes provisions for surveillance, seabed mapping, the installation of eco-friendly buoy fields, and an enforcement regime.

A range of integrated management measures are implemented across the DS, including:

- Regulation of anchoring and deployment of eco-friendly buoy fields to minimize physical disturbance to the seabed and *Posidonia* meadows;
- Fishing restrictions and seasonal closures, including gear limitations, no-take zones, and co-management schemes with fishers to promote sustainable use and species recovery;
- Bans on bottom trawling and seabed material extraction to prevent habitat degradation;
- Habitat and species monitoring and restoration initiatives, such as *Posidonia* replanting and invasive species control;
- Environmental education and awareness campaigns aimed at tourists, boaters, and local communities to reduce human impacts and promote stewardship.

D. Cetacean Migration Corridor

The Mediterranean Cetacean Migration Corridor, established officially as a Marine Protected Area[10] (MPA) in 2018. The DS is part of the Western Mediterranean Marine Ecoregion. The corridor is also recognized as a SPAMI under the Barcelona Convention UNEP/MAP (2019), and forms part of the North-Western Mediterranean Sea PSSA, as designated by the International Maritime Organization (IMO) (see Table 46).

***Table 46**. Description of the type of MPA, protection status, and responsible management body for Cetacean Migration Corridor demonstration site.*

Type of MPA	Stage of establishment	Status of protection	Management body
Individual MPA	Designated	Minimally protected	Ministry for Ecological Transition and the Demographic Challenge

[9] (Catalunya) Decret 25/2018
[10] (Spain) Royal Decree 699/2018

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Additionally, it is included in the Northwest Mediterranean Pelagic Ecosystem Ecologically or Biologically Significant Marine Area (EBSA). Although the site is recognized under various conservation frameworks, its overall level of protection remains low. The DS includes with several other protected areas: the Columbretes Islands Marine Reserve, the Special Protection Areas (SPAs) of the Marine Area of the Ebro Delta–Columbretes Islands, the Plataforma-talud marinos del Cabo de la Nao, and the SCI Sebadal de San Andrés.

Activities inside and outside the demo site are governed by cross-sectoral spatial regulation through the Spanish Marine Spatial Plan[11] (MSP). Furthermore, applicable international (UNCLOS), EU (CFP, MSFD), and national regulations about fisheries, offshore oil and gas, renewable energy, and pollution control also apply.

The primary objective of the Mediterranean Cetacean Migration Corridor MPA is to ensure the favourable conservation status of both migratory and non-migratory marine mammal species that inhabit or traverse the area. The conservation focus is on marine mammals and sea turtles.

Although the management plan is still being finalized, several management measures are already in effect. These include precautionary measures such as the prohibition of seabed exploration and oil and gas extraction within the MPA. Specifically, all forms of active seabed surveys (e.g. core sampling, explosives, pulsed compressed air sources, sonar mapping, and drilling) are prohibited, as is any oil and gas extraction activity, except for those authorized under existing research or exploitation permits.

Voluntary management measures are also implemented for the PSSA. These include a recommended vessel speed reduction to between 10 and 13 knots in areas where large or medium cetaceans are detected or reported, and maintaining a safe distance from the animals.

E. L'Albera

The DS include a site designated as SPA in 2005 and as SAC in 2014[12], known as "L'Albera." However, this designated site includes only a very limited marine zone, which is minimally protected (see Table 47). Two regional legislative instruments influence activities outside the MPA. The first is a law that regulates both professional and recreational fishing, as well as aquaculture practices[13]. The second is legislation that prohibits any form of destruction or disturbance to Neptune seagrass meadows[14].

[11] (Spain) Royal Decree 150/2023
[12] (Catalonia) Agreement GOV/150/2014
[13] (Spain) Law 2/2010
[14] (Catalonia) Order 91.210.098

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 47. Description of the type of MPA, protection status, and responsible management body for the L'Albera demonstration site.

Type of MPA	Stage of establishment	Status of protection	Management body
Individual MPA	Designated	Minimally protected	Serveis Territorials Girona

A management plan[15] was adopted in 2014 to define conservation objectives for the broader Catalan region. This includes targets such as increasing habitat density by 5%, maintaining *Posidonia oceanica* coverage above 0.8 of the reference values set by the competent authority, and preserving the habitat's structure, quality, and ecological functions at favourable levels. One of the key objectives for the demo site is to achieve and maintain a favourable conservation status for the *Posidonia oceanica* habitat.

Another objective focuses on the conservation of the known distribution of reef habitats. Specific targets include ensuring that biogenic communities account for more than 80% of total habitat coverage and that characteristic species represent over 80% of the species composition within these habitats. To supports these objectives, a range of conservation measures is in place (see Table 48).

Table 48. Conservation measures associated with L'Albera demonstration site

Measures	Description
Water Quality Control	Monitoring water quality along the shoreline and regulating sediment discharge.
Effluent Treatment	Treating agricultural, urban, and industrial effluents to reduce organic matter input and control nutrient levels.
Trawling Restrictions	Prohibiting bottom trawling in all areas where *Posidonia oceanica* or reef habitats are present.
Mooring and Vessel Activity Regulation	Managing mooring practices and regulating activities carried out by vessels while moored.
Invasive Species Control	Monitoring and managing invasive algae species.
Habitat Restoration	Restoring the most degraded habitat areas, including the removal of marine debris from the seabed.
Diving Activity Management	Regulating diving in areas where the habitats are present.
Eco-Friendly Mooring	Installing environmentally friendly mooring systems.
Fishing Activity Regulation	Monitoring and regulating both professional and recreational fishing in areas with habitat presence.
Artificial Reefs	Deploying artificial reefs to deter trawling and protect sensitive habitats.
Research and Mapping	Conducting studies and inventories to improve fine-scale habitat mapping and enhance understanding of associated biocenosis.
Connectivity	Enhancing connectivity between locations with presence of these habitats.

[15] (Catalonia) Agreement GOV/150/2014 – Annex 6

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

F. Italian Northern Adriatic

The DS is located in the Northern Adriatic Sea and includes the Natura 2000 site 'Trezze San Pietro e Bardelli,' designated under the Birds Directive as a SPA and under the Habitats Directive as a SAC. The site lies within the territorial sea and is minimally protected (see Table 49). It was established in 2013 and covers an area of 2,380 hectares.

Table 49. *Description of the type of MPA, protection status, and responsible management body for the Italian Northern Adriatic demonstration site.*

Type of MPA	Stage of establishment	Status of protection	Management body
Small MPA network	Implemented	Minimally protected	Friuli-Venezia Giulia Region

No management plan is currently in place for the MPA within the DS. The MPA was established to protect five species listed in the Annex II of the Habitats Directive, *Caretta caretta*, *Ichthyaetus melanocephalus*, *Phalacrocorax aristotelis desmarestii*, *Puffinus yelkouan*, and *Tursiops truncatus*, as well as two habitats: reefs (Habitat type code 1170) and sandbanks which are slightly covered by sea water all the time (Habitat type cose 1110). The reef habitats feature coralligenous bioconstructions composed of calcareous algae (*Lithophyllum*, *Peyssonnelia*), coral species such as *Cladocora*, and other structural organisms.
The structural complexity and hydrological characteristics of these areas provide essential habitats for a range of marine species, including rare phytobenthic organisms and both demersal and pelagic fish. In particular, the outcrops serve as critical breeding grounds for shark species such as the blue shark (*Prionace glauca*), nursehound (*Scyliorhinus stellaris*), lesser spotted dogfish (*Scyliorhinus canicula*), and smooth-hound (*Mustelus mustelus*).

G. Burgas Bay

The Burgas Bay DS is located along the south Bulgarian Black Sea coast in largest Bay of Bulgaria, encompassing the territorial sea. It overlaps with several sites designated under the Habitats Directive: Aheloy–Ravda–Nesebar, Otmanli, Plaj Gradina–Zlatna Ribka, and Emine–Irakli as SACs. Zaliv Chengene Skele was designated under both the Birds and Habitats Directives. The site has low level of protection (see Table 50).

Activities occurring inside and outside the MPAs are governed by the Bulgarian Maritime Strategy, adopted in 2023[16], Maritime Spatial Plan 2021-2035, as well as by Municipal Master Plans and various sectoral planning instruments.

[16] (Bulgaria) Decision No. 918

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 50. *Description of the type of MPA, protection status, and responsible management body for the Burgas Bay demonstration site.*

Type of MPA	Stage of establishment	Status of protection	Management Body
Medium MPA network	Designated	Minimally protected	• The Regional Inspectorate of Environment and Water in Burgas • The Basin Directorate for Water Management in the Black Sea Region

Although there are no operational management plans for each MPA, site-specific regulatory measures are in place in accordance with Natura 2000 designation orders. The conservation objectives aim to protect natural habitat types and species habitats by ensuring the maintenance of their populations and distribution within the designated zones, thereby achieving and sustaining a favorable conservation status. The habitats of concern include seagrass meadows (Habitat type code 1160) and sandbanks that are slightly covered by seawater at all times (Habitat type code 1110). The key species targeted for conservation include *Ruppia maritima*, *Zostera marina*, *Zostera noltei*, *Donax trunculus*, *Chamelea gallina*, and *Mytilus galloprovincialis*. To supports these objectives, a range of conservation measures is in place (see Table 51).

Table 51*. Conservation measures associated with the Burgas Bay demonstration site.*

Measure	Description
Minimum Habitat Area	Maintaining the habitat area at a minimum number of hectares (exact value to be specified).
Oxygen Saturation	Ensuring oxygen saturation of at least 68% in the bottom water layer.
pH Range	Maintaining a pH range between 6.5 and 8.0.
Field Studies on Typical Species	Conducting field studies to identify typical plant species in the habitat.
Surveys on Plant Species Coverage	Carrying out additional field surveys to determine the projected coverage of dominant typical plant species.

H. Central Romanian Coast

The demo site overlaps with four sites designated as SACs under the Habitats Directive: Plaja Submersă Eforie Nord – Eforie Sud, Zona Marină de la Capul Tuzla, Costinești – 23 August, and Cap Aurora and one SPA. All these MPAs are located within the territorial sea and demonstrate a light level of protection (see Table 52).

Activities outside the MPAs are regulated through the Romanian Marine Spatial Plan[17] and a Coastal Zone Management Strategy.

[17] (Romania) Government Ordinance No. 97/2023

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 52. Description of the type of MPA, protection status, and responsible management body for the Central Romanian demonstration site.

Type of MPA	Stage of establishment	Status of protection	Management body
Small MPA network	Implemented	Lightly protected	• The Ministry of Environment, Water and Forests • National Agency for Natural Protected Areas

The SACs Plaja Submersă Eforie Nord – Eforie Sud[18] and Zona Marină de la Capul Tuzla[19] have an established management plan.
The conservation objectives aim to protect natural habitat types and species habitats by ensuring the maintenance of their populations and distribution within the designated zones, thereby achieving and sustaining a favorable conservation status. The habitats of concern include Sandbanks which are slightly covered by seawater (Habitat type code 1110), Shallow fine sands (Habitat type code 1110-3), Well sorted sands (Habitat type code 1110-4), Mudflats and sandflats not covered by seawater at low tide (Habitat type code 1140), Supralittoral sands with or without fast-drying drift lines (Habitat type code 1140-1), Midlittoral sands (Habitat type code 1140-3) and Reefs (Habitat type code 1170). The key species targeted for conservation include *Tursiops truncatus*, *Phocoena phocoena*, *Alosa immaculata*, *Alosa tanaica*, *Acipenser stellatus*, *Donax trunculus*, *Donacilla cornea*, *Cystoseira barbata / Gongolaria barbata*, *Hippocampus guttulatus*, *Tricolia pullus*, *Hemimysis serrata*, and *Huso huso.*

The objectives further include ensuring that activities such as fishing, tourism, and aquaculture are conducted sustainably; monitoring and reducing pollution levels, including eutrophication and contamination by heavy metals and hydrocarbons; and conducting scientific research to monitor the state and trends of the environment.

I. Raet National Park

The DS is located in Norwegian part of the Skagerrak and within the Raet National Park. The Park covers 599 km^2 in marine zone and 8 km^2 in terrestrial zone. It was established in 2016[20] and is located at the easternmost end of a chain of 4 disconnected Marine National Parks in Norway.

Several laws and regulations govern activities within the park. These include, among others, the Marine Resources Act, the Outdoor Recreation Act, the Nature Diversity Act, the Motor Traffic Act, the Cultural Heritage Act, the Wildlife Act, the Pollution Control Act, the Planning and Building Act, and the Act relating to Salmonids and Freshwater Fish. However, despite this comprehensive legal framework, the level of

[18] (Romania) Order No. 1.432/2016 - ROSCI0197 annex
[19] (Romania) Order No. 1.432/2016 - ROSCI0273 annex
[20] (Norway) Regulation FOR-2016-12-16-1632

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

protection remains relatively low (see Table 53). In addition, a regional water management plan has been adopted in accordance with the Water Framework Directive.

***Table 53**. Description of the type of MPA, protection status, and responsible management body for the Raet National Park demonstration site.*

Type of MPA	Stage of establishment	Status of protection	Management body
Individual MPA	Implemented	Minimally protected	- Management board, (*Nasjonalparkstyret)* - National Park Manager (*Nasjonalparkforvalter*)

A revised management plan[21] was approved by the Management board in 2023 and is currently awaiting approval from the Norwegian Environment Agency.
Raet National Park aims to protect ecosystems, geological formations, marine habitats, and cultural heritage, while allowing for low-impact recreation. The park preserves a large natural area with minimal human interference, focusing on unique and representative ecosystems, well-preserved Quaternary geological deposits from the last Ice Age, and the rich biodiversity of plant and animal life. It also emphasizes protecting the coastal landscape, including the sea surface, and cultural monuments linked to Aust-Agder's coastal heritage, both on land and at sea.

In marine areas, the focus is on preserving the underwater landscape and associated biodiversity. Key features include ice-marginal deposits, shell sand formations, soft-bottom habitats, eelgrass meadows, underwater seagrass beds, kelp forests, and fish spawning areas. Public access is supported through simple, environmentally friendly outdoor activities with limited infrastructure. Special zones have been established to protect key features (see Table 54).

***Table 54.** Zones established in the Raet National Park demonstration site.*

Zone	Key features	Description
A	Seabird Nesting Areas	Seasonal restrictions on transport and a 50-meter no-hunting/fishing buffer from land into the sea protect breeding bird species (e.g. black-headed gull, common tern, barnacle goose, oystercatcher, eider, mute swan).
B	Vulnerable Habitats and Species	Focuses on particularly sensitive ecological areas requiring targeted conservation efforts.
C	Scientific Reference Areas	Prohibits harvesting using bottom trawling or dragging tools to protect areas of high scientific value.

Several conservation measures are in place:

- All vegetation, on land and in the sea, including dead wood and drifted kelp, is protected from harm or removal.
- Pollution and littering are prohibited, and waste must be removed.

[21] (Norway) Forvaltningsplan for Raet nasjonalpark 2023–2028

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- The use of harmful chemicals is banned, and sewage discharge from boats is not allowed.
- Excessive noise is forbidden to minimize disturbance, and wildlife, particularly animals with nests, dens, or breeding grounds, are protected from harm and unnecessary disruption.
- Releasing animals into the park environment is not permitted.
- All transportation must be carried out with care; motorized vehicles are prohibited on land, ice, and in airspace below 300 meters.
- Motorboat racing and test-racing are also not allowed, except for traditional events established before the park's designation.
- Activities such as harvesting wild marine resources are permitted in accordance with the Marine Resources Act.
- Fishing and harvesting from land and within a 50-meter radius into the sea are allowed under the Salmonids and Fresh-Water Fish Act.
- Harvest of shells is allowed for private consumption.

Some of these conservation measures are zone-specific and include time-based restrictions (see Table 55). Other zones aim to conserve the lobster population and are designated as Other Effective Area-Based Conservation Measures (OECMs). In these areas, only fishing methods such as handlines, fishing rods, auto jiggers, trolling lines, or purse seines are permitted. Additionally, lobster fishing in Norway is prohibited except between 8:00 AM on October 1st and November 30th.

Another measure involves the protection of coastal cod in southern Norway, where all fisheries are prohibited in defined spawning areas during the spawning period from January 1st to April 30th, with some exceptions. This regulation[22] is part of the broader fisheries management framework under the Harvest Regulation and is not part of park management.

Table 55. *Conservation measures associated with the zones of the Reat National Park demonstration site.*

Zone	Conservation measures
Zone A	• Seasonal restrictions on transport, fishing, and hunting within 50 meters from the shoreline to protect birdlife. • 15 April – 15 July: All land and sea traffic within 50 meters from shore is prohibited. • 1 March – 1 September: All fishing and hunting from or on land is prohibited. Camping is prohibited during the bird nesting season, except on the island *Ramsøya*. • On *Tromlingene Island*: permanent prohibition of all hunting and use of firearms; permanent prohibition of traffic and camping on the southern part of the island.
Zone B	• Prohibition of logging of timber for personal use, grazing, foraging of drifted seaweed and kelp, and collecting branches for campfires.– Camping is prohibited, except on the island *Ramsøya*.
Zone C	• Prohibition on the harvest of wild marine resources using bottom trawling or dragging harvesting tools.

[22] Norway (2021) FOR-2021-12-23-3910

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

J. Vlaamse Banken MPA: Hinder Banks

The DS is situated within the North Sea Marine Ecoregion and overlaps with the SAC Vlaamse Banken, designated under the Habitats Directive[23]. Covering an area of 1,099.39 km², it extends approximately 45 km offshore, encompassing both territorial waters and part of the Belgian EEZ. Three SPAs are located near the coast but are not spatially linked. The shallow western coastal banks are particularly important as foraging areas for breeding birds and wintering birds. The DS also overlaps with a Ramsar site "Westelijke kustbanken". Overall, the level of protection remains minimal (see Table 56).

The SAC borders the French area "Bancs de Flandres" SAC/SPA. The former SAC "Trapegeer–Stroombank" has been integrated into the current boundaries of Vlaamse Banken. Moreover, the area has been proposed as a marine reserve under the Belgian Marine Spatial Plan for the period 2026–2034.

Activities outside the MPA are regulated by the current Marine Spatial Plan (2020–2026), with a revised version under development for 2026–2034. The Marine Strategy for the North Sea[24], developed to implement the MSFD in Belgium, is applicable to the DS and extends beyond it.

Table 56. *Description of the type of MPA, protection status, and responsible management body for the Vlaamse Banken MPA: Hinder Banks demonstration site.*

Type of MPA	Stage of establishment	Status of protection	Management Body
Individual MPA	Designated	Minimally protected	The Marine Environment Service of the Belgian Federal Public Service for Health, Food Chain Safety and Environment

A management plan[25] for the Vlaamse Banken is in place. The SAC was designated for the protection of the sandbanks permanently covered with seawater (Habitat type code 1110) and the reefs (Habitat type code 1170). In the BPNS, these habitats and their associated biological communities are ecologically the most valuable habitats (Degraer et al., 2009).
Operational objectives are categorized into three types:

- Type 1, where knowledge and data are available;
- Type 2, where no monitoring or quantitative evaluation is possible; and;
- Type 3, where specific monitoring is lacking but relevant research and information are available to support the achievement of the conservation objective. These objectives are defined for both species and habitats and are further divided into targets and sub-targets.

[23] (Belgium) Royal Decree of 16 October 2012
[24] (Belgium) Programme of Measures for Belgian Marine Waters 2021
[25] (Belgium) Beheerplannen Natura 2000

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Some of these apply specifically to the Vlaamse Banken MPA, while others pertain to the entire BPNS.

K. Scottish MPA Network

The demo site Scottish MPA Network is located in the Temperate Northern Atlantic Marine Realm, within the territorial sea. It overlaps with 8 SACs, 12 SPAs, and the Shetland and Fair Isle Important Marine Mammal Area (IMMA). Despite these designations, the overall level of relevant protection remains low (see Table 57).

***Table 57**. Description of the type of MPA, protection status, and responsible management body for the Scottish MPA Network demonstration site.*

Type of MPA	Stage of establishment	Status of protection	Management body
EBSA	Proposed	Lightly protected	/

Within the IMMa, an overarching Shetland Islands Regional Marine Plan[26] is in place, aiming to ensure sustainable management of Shetland's marine environment. Its goal is to maintain clean, healthy, safe, productive, and biologically diverse seas that meet the long-term needs of both nature and local communities.

The existing SACs, and MPAs in Shetland focus on conserving a wide range of benthic habitats, including rocky and biogenic reefs, as well as supporting mobile species such as *Lutra lutra*, *Halichoerus grypus*, and *Phoca vitulina*. The SPAs are designated to protect Puffin (Fratercula arctica), Fulmar (*Fulmarus glacialis*), Leach's petrel (*Oceanodroma leucorhoa*), Arctic tern (*Sterna paradisaea*), amongst others.

Specific conservation and restoration objectives for the Shetland and Fair Isle IMMA have not been established. However, the IMMA was designated due to its importance for a variety of species, including[27]: *Phocoena phocoena*, *Megaptera novaeangliae*, *Grampus griseus*, *Orcinus orca*, *Halichoerus grypus*, *Phoca vitulina*, *Balaenoptera acutorostrata*, *Lagenorhynchus albirostris*, *Lagenorhynchus acutus*, *Balaenoptera physalus*, *Balaenoptera borealis*, *Globicephala melas*, *Physeter macrocephalus*, and *Delphinus delphis*.
BLUE CONNECT will aim to improve monitoring in this area for these species, in collaboration with the local community and whilst trialling innovative techniques and tools and share any lessons learned with other MPAs within the Scottish MPA Network.

[26] (Scotland) SIRMP 2021
[27] IUCN Marine Mammal Protected Areas Task Force (IUCN-MMPATF). (2023). Shetland and Fair Isle – Important Marine Mammal Area (IMMA) Fact Sheet.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Annex 5: MPA monitoring and restoration measures

A. Macaronesia

At the Macaronesia DS, various monitoring tools are employed to assess biodiversity and environmental pressures. However, most of these initiatives are either not fully implemented or lack temporal consistency, as they do not constitute continuous time series. Passive acoustic sensors are used to monitor marine mammals (see Table 58). This method enables long-term, non-invasive data collection, though it requires regular maintenance and entails operational costs.

Sensors are also deployed for monitoring pelagic ecosystems and phytoplankton biomass via satellite remote sensing (see Table 59), as well as for assessing physical conditions and habitat characteristics using oceanographic moorings (see Table 60). These approaches provide continuous, high-frequency data. While oceanographic moorings offer localized spatial data, satellite remote sensing provides broader spatial coverage on a global scale.

Table 58. *Description of passive acoustic monitoring technique at the Macaronesia demonstration site.*

Focus	Biodiversity
Function	Monitoring
Frequency of usage	Continuous
Target	Cetaceans/ Marine Mammals
Data output	Presence/absence

Table 59. *Description of satellite remote sensing technique at the Macaronesia demonstration site.*

Focus	Pressure
Function	Monitoring
Frequency of usage	Continuous
Target	Phytoplankton biomass
Data output	Chlorophyll-a levels

Table 60. *Description of oceanographic moorings monitoring technique at the Macaronesia demonstration site.*

Focus	Pressure
Function	Monitoring
Frequency of usage	Continuous
Target	Physical conditions
Data output	Temperature, salinity

Marine megafauna is also monitored using aerial surveys (see Table 61). This innovative method is non-invasive but requires significant logistical and financial resources.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Table 61. Description of aerial survey monitoring technique at the Macaronesia demonstration site.

Focus	Biodiversity
Function	Monitoring
Frequency of usage	Monthly visits
Target	Marine megafauna
Data output	Species absence

Fish assemblages are monitored using underwater visual censuses (see Table 62), while fish stock assessments are conducted by recording fish landings (see Table 63). Both methods involve ship-based surveys and generate biomass data. They are considered cost-effective and valuable for collecting long-term monitoring data.

Table 62. Description of underwater visual census monitoring technique at the Macaronesia demonstration site.

Focus	Biodiversity
Function	Monitoring
Frequency of usage	Monthly visits
Target	Fish assemblages
Data output	Species biomass

Table 63. Description of fish landing monitoring technique at the Macaronesia demonstration site.

Focus	Pressures
Function	Monitoring and assessing
Frequency of usage	Monthly visits
Target	Fish stocks
Data output	Species biomass

Remote underwater video (BRUVs) and environmental DNA (eDNA) are identified as valuable methods to be implemented at the demo site. BRUVs (Baited Remote Underwater Video Systems) offer a non-invasive approach to monitor fish presence and behavior, providing visual data without disturbing the ecosystem. Environmental eDNA is an innovative technique used to detect species diversity and occurrence through water sampling. While it requires specialized laboratory equipment and expertise, it holds great potential for improving biodiversity assessments.

Several restoration measures are currently underway at the Macaronesia DS, targeting coastal, offshore, and deep-sea environments.

One key initiative focuses on improving water quality in ecologically sensitive areas such as lagoons and estuaries. This is being achieved through the implementation of advanced wastewater treatment plants aimed at reducing nutrient inputs. These measures specifically target marine vegetation that has been degraded due to urban development and eutrophication.

A second coastal restoration measure involves the active planting of native seagrass species to stabilize sediments. The objective is to restore marine vegetation and

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

enhance habitat quality, particularly in areas serving as nursery grounds for marine species. Pilot projects in Madeira have demonstrated the potential of this approach for sediment stabilization and biodiversity enhancement.

The installation of artificial reefs represents another significant restoration effort, both along the coast and in offshore areas. These structures are deployed to promote biodiversity and support fish stock recovery by reversing habitat degradation and mitigating the impacts of overfishing.

In offshore and deep-sea areas, restoration efforts include the establishment of no-take zones and gear restrictions, particularly in the Azores. These measures have shown positive outcomes in terms of fish stock recovery and the protection of nursery habitats.

Deep-sea restoration specifically aims to remediate damage to the seafloor caused by bottom trawling and exploratory mining activities, which have led to substantial habitat destruction and biodiversity loss. This type of restoration requires considerable resources and strong international collaboration to ensure effective enforcement and long-term success.

B. Cabo Roche

Side-scan sonar mapping is carried out annually in the DS (see Table 64). This high-resolution technique provides detailed habitat maps used for restoration planning and impact assessment. Despite its high cost, it has been integrated into Spain's Marine Strategies for 2023–2024.

Table 64. *Description of Side-scan sonar technique at the Cabo Roche demonstration site.*

Focus	Biodiversity & pressures
Function	Monitoring & assessment
Frequency of usage	Monthly visits
Target	Benthic habitats
Data output	Habitat maps (m^2 of coverage)

Restoration measures in the DS focus on hard bottom habitats and deep-sea communities, through a collaborative project involving the fishing sector, SOLDECOCOS, and WWF Spain. This initiative stands out for its participatory approach, engaging local fishers directly in marine conservation. Using the "badminton method," the project restores benthic species such as corals, sponges, and gorgonians by replanting individuals accidentally caught as bycatch.

C. Pitiusas Islands

A variety of standard and innovative methods are used to monitor biodiversity and human pressures in the Pitiusas Islands DS. Monitoring efforts focus on both species and habitats, as well as the pressures that affect them, to assess the ecological status of the MPAs.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Techniques include underwater visual censuses using transects and point counts, remote sensing with Sentinel-2 satellite imagery, scientific monitoring of fisheries through logbooks and catch data, and environmental DNA (eDNA) at the pilot stage. Participatory monitoring involving fishers and citizens also plays a key role, alongside continuous enforcement patrols. The main monitoring targets are commercial fish species, marine mammals, seabirds, macroinvertebrates, algae, and key habitats.

These efforts provide essential data for assessing pressures and informing adaptive management, and they contribute to mandatory reporting under the Habitats and Birds Directives (Article 17). Data outputs include biomass, species richness, habitat cover, fishing effort, presence or absence of species. While approaches like visual censuses, logbooks, patrols, and participatory monitoring are already well established, emerging tools such as eDNA and artificial intelligence for data integration are needed to expand.

This combined approach enhances spatial and temporal resolution, integrates both direct and indirect indicators, supports transparency and compliance, and fosters stakeholder engagement, although it requires substantial resources, coordination, and capacity-building

Several restoration measures are being implemented within the DS to enhance ecosystem health and resilience. These include passive restoration of *Posidonia oceanica* meadows, regular seabed and beach clean-up campaigns, the application of biosecurity protocols, control of invasive species, and improvements to wastewater treatment systems. Clean-up efforts are conducted regularly and involve divers, local communities, and marina operators in the removal of marine litter and debris from coastal and underwater areas. To prevent the spread of invasive snakes, specific biosecurity measures such as trapping and public awareness campaigns have been put in place. In addition, upgrades to wastewater treatment facilities aim to reduce the inflow of nutrients and contaminants into the marine environment.

Together, these actions contribute to the conservation and recovery of *Posidonia oceanica* meadows, soft-bottom habitats such as sandy and seagrass beds, hard-bottom habitats including reefs, rocky outcrops and coralligenous assemblages, as well as critical nursery grounds for fish and invertebrates.

D. Cetacean Migration Corridor

Several monitoring programs have been implemented covering the DS, each with a specific focus on ecosystem structure, pressures and impacts, or connectivity (see Table 65).

The ACCOBAMS Survey Initiative collected data between 2018 and 2019 on key indicators such as the abundance of selected species, intensity of human activities, and presence of marine litter. Data were gathered using line transect sampling. Challenges encountered included legal considerations, the time required to conduct surveys, and limited resources. Both sighting and acoustic data are available through

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

ACCOBAMS, and derived products such as species density maps can be accessed via the Mediterranean Biodiversity Knowledge Platform.

***Table 65**. Overview of monitoring programs in the Cetacean Migration Corridor demonstration site and their specific thematic focus.*

Monitoring programs	Specific focus
ACCOBAMS Survey Initiative (ASI)	Ecosystem structure; pressures and impacts
Mediterranean Ocean Observing System for the Environment -	Ecosystem structure
Balearic Sperm Whale Project	Ecosystem structure
Fixed Line Transect Mediterranean monitoring Network (FLT Med Net)	Ecosystem structure; pressures and impacts
LIFE CONCEPTU MARIS	Ecosystem structure; connectivity
CETAMED NORTE	Ecosystem structure; connectivity

The Mediterranean Ocean Observing System for the Environment has been active since 2010, collecting data on water mass properties, biogeochemical parameters, and zooplankton communities. Surveys are conducted annually, and data are integrated into the GeoNode platform. The Balearic Sperm Whale Project involves the collection of remote biopsy samples and other biological material such as faeces and sloughed skin. Monitoring is carried out on an opportunistic basis.

The Fixed Line Transect Mediterranean Monitoring Network conducts repeated surveys along 16 fixed transects in the Western Mediterranean. It collects environmental DNA (eDNA) from macro- and megafauna, along with data on floating marine litter and maritime traffic. Surveys take place five times per season, and the resulting data are shared through international platforms including EMODnet, OBIS Seamap, the French Information System on Nature (SINP), and the Tursiomed/Intercet platform.

Both LIFE CONCEPTU MARIS and CETAMED NORTE are recent examples of project-based monitoring of cetaceans and sea turtles.

No restoration measures are currently undertaken.

E. L'Albera

At L'Albera DS, three different approaches are used for the monitoring and evaluation of MPAs.

The first approach consists of the official monitoring of marine Natura 2000 sites on a regional level. On a DS level, it mainly focuses on evaluating the environmental status of Neptune seagrass (*Posidonia oceanica*) meadows. This monitoring was implemented in 2024, and it will be carried out once every four years (see Table 66).

***Table 66**. Description of the seagrass monitoring used at L'Albera demonstration site.*

Focus	*Posidonia oceanica* meadows
Function	Assessing the environmental status of the habitat
Frequency of usage	Every 4 years

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Target	*Posidonia oceanica*
Data output	Density of shoots, % of living plant coverage and burial degree of shoots

Another approach involves acoustic telemetry to monitor fish movements (see Table 67). Acoustic receivers are moored across the study area and detect fish in real-time as they pass by. This technique provides valuable insights into fish migration patterns. However, it also presents several challenges, including the high cost of the acoustic receivers and the need for international collaboration, depending on the geographical scope of the study. This monitoring is part of an ongoing project to study fish connectivity throughout the whole Catalan coast.

Table 67. *Description of the acoustic telemetry monitoring technique used at L'Albera demonstration site.*

Focus	**Biodiversity**
Function	Assessing movements
Frequency of usage	Continuous recording
Target	Large size fish species
Data output	Individual acoustic print

The last monitoring technique relies on citizen science (see Table 68). Approximately once a month, species are observed and recorded on the citizen science platform *iNaturalist*. This method contributes to biodiversity monitoring while fostering community engagement, ownership, and collaboration within the MPA framework. However, it also faces limitations, such as difficulty recruiting committed participants, the need for expert validation of sightings, and concerns regarding data quality.

Table 68*. Description of Citizen Sciences monitoring technique used at the L'Albera demonstration site.*

Focus	Biodiversity and anthropogenic pressures
Function	Monitoring
Frequency of usage	Monthly visits
Target	Species
Data output	Species sightings

The restoration measures implemented at the DS focus on the rehabilitation of marine vegetation. The primary objective is to restore degraded seagrass ecosystems and enhance spawning and nursery habitats for marine species. Human activities, such as anchoring and, mooring have negatively impacted the area. To address these issues, two restoration initiatives are currently being carried out in the coastal ecosystems:

- Removal of abandoned mooring blocks,
- Replanting of *Posidonia oceanica* shoots: Shoots torn up by storms are being recovered by the local community and replanted in areas where meadows have been degraded, using different methodologies to fix them.

F. Italian Northern Adriatic

Current monitoring activities at the Italian Northern Adriatic DS focus primarily on habitats and marine species protected under the Habitats Directive. In addition,

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

surveillance monitoring is being conducted on species of EU interest, including both native and non-native species. However, there is no monitoring in place to assess anthropogenic presence, pressures, or impacts. A restoration project targeting *Pinna nobilis* is also planned.

G. Burgas Bay

Bulgaria conducts six-yearly monitoring under the Habitats Directive to report on the conservation status of habitats and species listed in the annex of the Directive. This reporting involves assessing the effectiveness of conservation measures and the overall status of protected areas and species.

Biodiversity monitoring and assessment focus on coastal and marine habitats, seabirds, and sea mammals. Anthropogenic pressures are also monitored and assessed.

Currently, there are no restoration measures in place in Burgas Bay DS.

H. Central Romanian Coast

National monitoring is being conducted to report on the Habitats Directive, primarily targeting species and habitats covered by the Directive. Both standard and innovative techniques planned to be employed to monitor and assess biodiversity as well as anthropogenic pressures. Plans include the use of Unmanned Surface Vehicles (USVs) equipped with various sensors as well as sampling.

The restoration measures at the DS primarily focus on soft-bottom and hard-bottom habitats. These measures aim to address both the physical loss and disturbance of the seabed and species. Restoration activities include the creation of biostructures to enhance biodiversity, with a focus on protecting and promoting the growth of flora and fauna such as *Zostera noltii* (seagrass), *Cystoseira barbata* (brown algae), and bivalve mollusks like *Donacilla cornea*, *Pholas dactylus*, and *Donax trunculus*.

Additionally, restoration efforts involve the relocation and/or reconsideration of work methods, incorporating environmentally friendly protective structures to ensure the conservation of marine biodiversity.

I. Raet National Park

A wide range of monitoring and evaluation methods are employed in the Raet National Park to assess biodiversity and environmental pressures. Since 2006, lobster populations have been monitored using a BACI design (see Table 69). This method is relevant for evaluating the effect of protection measures.

Table 69. *Description of lobster monitoring technique at the Raet National Park demonstration site.*

Focus	Biodiversity
Function	Monitoring
Frequency of usage	Variable
Target	Species
Data output	Population estimates and other variables

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

To monitor fish communities in the demo site, video surveys have been used since 2012 (see Table 70). This approach is non-invasive. Monitoring is also carried out through a fish tagging project, which has the added benefit of involving stakeholders.

***Table 70**. Description of video surveys monitoring technique at the Raet National Park demonstration site.*

Focus	Biodiversity
Function	Monitoring
Frequency of usage	Not known
Target	Species/taxa (fish communities)
Data output	Video survey data

Species are also monitored using beach seine data (see Table 71). This method benefits from nearly 100 years of data collection and is still in use. Maintaining this time series is important for assessing long-term trends in the DS.

***Table 71.** Description of Beach seine monitoring technique at the Raet National Park demonstration site.*

Focus	Biodiversity
Function	Monitoring
Frequency of usage	Yearly
Target	Species
Data output	Catch data

Seabird monitoring is conducted at the regional level (see Table 72). Every three years, manual seabird counts are carried out. The long time series allows for the interpretation of trends. Observations are made both inside and outside the demo site. In addition, a long-term national monitoring and mapping program (SEAPOP) has been in place since 2005. It provides continuous data on population development, reproduction, adult survival, and diet.

***Table 72.** Description of seabirds monitoring technique at the Raet National Park demonstration site.*

Focus	Biodiversity
Function	Monitoring
Frequency of usage	Every 3 years
Target	Seabirds' species
Data output	Counts

Pressures are also assessed in the DS. Coastal pollutants are monitored annually at several stations. Levels of 176 harmful substances are measured in mussels, cod, eider ducks, and two species of snail. This monitoring is part of a national program aligned with OSPAR. Ocean acidification is monitored yearly or every two years by collecting pH data in the water column.

Ecosystems are also monitored yearly at multiple stations as part of a national program. Data on various ecological indicators are collected. Coastal mapping targeting habitats such as eelgrass beds or kelp forests were last carried out before 2010 and need updating. These efforts provide distribution data of nature types in the form of polygons.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Restoration measures in the Raet National Park include the restoration of seabird nesting habitats through the removal of mink from important breeding areas. The objective is to eliminate as many minks as possible from selected islands in the archipelago, using traps to prevent their re-establishment during the summer. This effort began in 2018 and is still ongoing. Another measure aims to reverse the deterioration of nesting habitats for marine bird species by implementing seasonal restrictions on transport, fishing, and hunting to protect birdlife. Both measures contribute to the overall objective of improving seabird nesting conditions.

There is restoration measure to address the overexploitation of lobster stocks by the designation of areas where lobster fishing is not permitted. These constitute fisheries management measures aimed at supporting stock recovery. Another pilot project on green gravels was tested but not implemented at scale. It involved seeding small rocks with kelp propagules cultivated in the laboratory, which were then out-planted in the field to support habitat restoration.

J. Vlaamse Banken MPA: Hinder Banks

Various monitoring and evaluation methods are in place at the Vlaamse Banken DS. One innovative technique currently in use is underwater soundscape monitoring, which involves the use of hydrophones (see Table 73). The collected data are processed through an existing pipeline supported by artificial intelligence and are submitted to the ICES data portal. One of the main advantages of this technique is its non-invasive approach to monitoring, although it requires dedicated financial resources.

***Table 73**. Description of underwater soundscape monitoring technique used at the Vlaamse Banken MPA: Hinder Banks demonstration site.*

Focus	Biodiversity and anthropogenic pressures
Function	Observations
Frequency of usage	Continuous
Target	Acoustic habitats
Data output	Spectrograms, hybrid millidecade band

Another innovative monitoring technique in use at the demo site is the deployment of an Autonomous Underwater Vehicle (AUV) equipped with cameras and various sensors, including side-scan sonar and sub-bottom profilers. This method enables the collection of high-resolution, fine-scale seafloor maps (see Table 74). Key advantages include extensive spatial coverage, non-invasive data collection, the ability to conduct repeated measurements of oyster growth over time, and detailed habitat mapping. However, the method also presents challenges, including the need for vessel time, financial and technical resources, favourable weather conditions, and considerable time for data processing.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

***Table 74**. Description of autonomous underwater vehicle monitoring technique used at the Vlaamse Banken MPA: Hinder Banks demonstration site.*

Focus	Biodiversity and anthropogenic pressures
Function	Monitoring for assessment of oyster growth and environmental/conservation status
Frequency of usage	Yearly visits
Target	Oysters, benthic communities, seafloor habitat
Data output	Oyster size distribution, Oyster density and coverage, Seafloor structure from side-scan sonar imagery

A standard monitoring technique employed at the DS is physical sampling using the Hamon Grab method, carried out from a research vessel. This approach is used to assess the environmental status of the seabed (see Table 75). While the method yields detailed and biodiversity-rich data, it is time- and resource-intensive, sensitive to weather conditions, and requires substantial effort for sample processing. The resulting data are archived in the Belgian Marine Data Centre (BMDC) repository.

***Table 75.** Description of physical sampling monitoring technique at the Vlaamse Banken MPA: Hinder Banks demonstration site.*

Focus	Biodiversity and anthropogenic pressures
Function	Assessment of environmental/conservation status
Frequency of usage	Yearly visits
Target	Species – taxa – habitats - ecosystems
Data output	Taxa abundance and coverage, species richness, length measurement

Another standard monitoring technique employed at the demo site is underwater video imaging. Its focus, function, and targets are similar to those of the physical sampling method (see Table 76). Data processing currently follows standard procedures, with artificial intelligence tools under development to support future analysis. The resulting data are archived in the Belgian Marine Data Centre (BMDC) repository. This technique offers several benefits, including its non-invasive nature and the ability to achieve landscape-level spatial resolution. However, it also presents challenges such as the need for time, resources, favourable weather conditions, and substantial data processing efforts.

***Table 76**. Description of underwater video imaging monitoring technique at the Vlaamse Banken MPA: Hinder Banks demonstration site.*

Focus	Biodiversity and anthropogenic pressures
Function	Assessment of environmental/conservation status
Frequency of usage	Yearly visits
Target	Species – taxa – habitats - ecosystems
Data output	Taxa abundance and coverage, species richness, length measurement

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

A monitoring method that is not yet implemented but identified as necessary at the demo site is scientific diving. This approach would focus on species-level monitoring and require frequent site visits. The primary objectives would include the collection of mussel samples, as well as measurements of individuals size and population density. Diving offers a flexible, non-invasive, and high-resolution monitoring option. However, its implementation is constrained by environmental factors such as water turbidity, wave height, and current strength, which significantly affect feasibility and safety.

In the Vlaamse Banken DS, two restoration measures are currently under development. The first focuses on the restoration of *Ostrea edulis* (European flat oyster) populations, while the second aims to implement measures related to bottom fisheries management.

The European flat oyster is a key species that has largely disappeared from Belgian waters of the North Sea, and its restoration is considered a priority. In the short term, efforts are directed toward the active recovery of oyster reefs and populations. In the longer term, passive recovery, achieved through the cessation of harmful local activities, will also play a critical role in re-establishing a balanced ecosystem. As part of the restoration, biodegradable artificial substrates will be deployed to support reef development. It is important to note that both living (e.g. fisheries) and non-living (e.g. sand extraction) resource extraction currently occur within the proposed restoration area.

In terms of restoration, challenges include the presence of illegal trawling activities and regulatory constraints on sourcing oyster spat. Specifically, the use of *Bonamia*-tolerant flat oyster spat from the Netherlands is legally restricted, requiring the use of *Bonamia*-free oysters.

The second restoration measure will target the degraded benthic community, particularly hard-bottom habitats, and the recovery of depleted fish stocks. This initiative has not yet been implemented, as negotiations with other Member States are still ongoing.

K. Scottish MPA Network

Various monitoring techniques are employed at the DS, including vantage point surveying, acoustic automated cameras, drones, land-based and aerial surveys, animal-borne telemetry tags, and citizen science initiatives. Both standard and innovative approaches are used to monitor biodiversity and environmental pressures, with a primary focus on marine mammals. These techniques are currently in use, and additional methods are being developed. The data collected within the Shetland and Fair Isle IMMA as part of BLUE CONNECT will contribute to the Shetland MSP and will inform future national datasets. The main benefits include the use of diverse monitoring methods, community involvement, and the generation of spatially and temporally comprehensive data. Key challenges include weather conditions,

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

public engagement, limited financial resources, short daylight hours in winter, and constraints related to equipment, vessel availability, and data processing capacity. No restoration measures are currently being undertaken that have a primary aim of improving marine mammal conservation.

Annex 6: Participation related information

A. Macaronesia

In the Macaronesia DS, there have been attempts to establish co-management in the Azores and Madeira. In the Azores, co-management was initiated in 2016 through a consultation process focused on fishing regulations within the Faial Marine Protected Area and the Natural Reserve of the Praia Islet. The process brought together various stakeholders, including researchers, fishers, public administrations responsible for sea affairs and fisheries, as well as maritime tourism enterprises. The main objective of this initiative was to consult on fisheries conservation management, encouraging dialogue and input from different sectors to support more sustainable practices.

In Cape Verde, co-management is still not included within the legal framework, but there are co-management initiatives in practice involving NGOs, local communities and authorities.

Collaborative processes in the Azores have fostered local ownership and built trust in conservation measures. However, they have not necessarily led to the acceptance of stricter regulations. In Cape Verde, there are no public consultations regarding stricter conservation measures, and decisions typically follow a top-down approach. The absence of decentralized decision-making and the lack of regular consultations with local community's limit stakeholders' ability to contribute meaningfully to MPA management.

Barriers to broader participation across the Macaronesia region may include logistical and communication challenges, such as the geographical distance between islands, as well as occasional shortages in resources dedicated to stakeholder engagement.

A participatory process was also established in 2024 under the name "Azores MPA Network Establishment." This process involves public consultations and stakeholder meetings with the aim of creating the largest marine protected area network in the North Atlantic, incorporating both fully and highly protected zones. The stakeholders engaged in this initiative include representatives from the fishing sector, environmental NGOs, maritime tourism operators, and local communities. The process seeks to ensure that diverse perspectives are considered in the planning and designation of the MPA network, fostering transparency and social acceptance of conservation measures.

In Madeira, stakeholder involvement is not taking place effectively. Fishers and local communities often lack understanding of the long-term benefits of sustainable practices. There is a clear gap in empowerment through direct participation in MPA governance and decision-making processes, as well as in the creation of marine

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

protected area networks. Challenges remain in ensuring the meaningful involvement of all fishers, particularly those engaged in small-scale operations, in these participatory processes.

B. Cabo Roche

Several participatory processes are in place in the Cabo Roche DS. A local working group was created in 2012 to support the approval of the Marine Reserve of Fishing Interest, through regular meetings and workshops. In 2018, a cross-border working group between Conil and Agadir was established to promote collaboration on MPAs and sustainable fisheries management. Another working group was launched in 2020 to define the management plan and governance structure for the SCI Western Gibraltar. These participatory platforms involve public and private sectors, academia, and civil society.

C. Pitiusas Islands

A co-management process is being developed in the DS through the Formentera Marine Stewardship Board. It covers all marine Natura 2000 sites and other MPAs around Formentera and Ibiza. The goals are to improve governance, protect biodiversity, support the local economy, and ensure better coordination. It also aims to encourage dialogue, resolve conflicts, and support adaptive management and monitoring.

The co-management involves public authorities (Consell Insular de Formentera, Balearic Government, Spanish Ministry), private actors (fishers' guilds, tourism operators, marinas), the scientific community, and civil society groups. Each plays a role; consulting on regulations, joining technical groups, and advising on monitoring. The board has three technical groups (administration, fisheries, tourism) and brings together over 97 participants from 47 organisations. It is seen as a model of participatory marine governance in the Mediterranean.

Other participatory processes also exist in the DS. These include LIFE INTEMARES (since 2018), GEN-GOB (ongoing), the Ibiza Preservation Action Plan (since 2023), and Marilles Foundation’s MPA LABs (since 2020). They involve informing, consulting, and collaborating with stakeholders through public meetings, working groups, citizen science, and forums. Their aim is to support MPA management plans, improve effectiveness, set priorities, and involve the community in actions like restoration and biosecurity. These processes include the same range of actors as the co-management initiative.

D. Cetacean Migration Corridor

The DS is currently progressing toward a participatory process through the establishment of a MPA Management Plan Development Consultation Group. The aim of this co-management initiative is to facilitate stakeholder dialogue in order to identify the various needs and solutions to be considered in the future management

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

plan. The goal is to ensure that the uses and activities within the area are compatible with the conservation of the species for which the MPA was designated. All relevant stakeholders have been actively involved since 2024 (see Table 77).

Table 77. *Stakeholders engaged in Cetacean Migration Corridor participatory process initiative.*

Stakeholders	Role of participants
Public sector (MITECO)	Responsible for MPA (co-)management
Public sector (other ministries: marine transport authority, army, fisheries)	Implementation of potential measures
Public sector (Fundación Biodiversidad)	Coordination of the consultation process
Public sector (CEDEX)	Research and scientific advice
Private sector (major maritime transport companies, ferries, fisheries groups)	Contribution to research and advice
Academia (Universities of Valencia, Balearic Islands, Málaga)	Research and scientific advice
Civil society (SUBMON, Tursiops, OceanCare, WWF)	Research, advice, and awareness-raising activities

The collaborative process successfully achieved its goal of fostering cooperation. A key enabling factor was the existence of legal requirements mandating stakeholder involvement. However, a notable barrier was the shortage of personnel resources. Despite this, all involved parties were able to influence the process, and all key stakeholder groups were represented.

E. L'Albera

In L'Albera demo site, an informal group of local stakeholders is working to promote a bottom-up approach to ensure effective management and conservation of the area. The group is also exploring the possibility of expanding the existing MPA as part of a new Natural Park.

This participatory process is located in the northern part of the Costa Brava (Catalonia) and brings together a range of interested parties, including:

- Public sector: Municipalities in the coastal area (Llançà, Colera, and Portbou) and occasionally members of the regional government
- Civil society: Local NGOs
- Private sector: Fishing Guild of Llançà, and tourism operators

So far, the group has convened at least once a year to discuss and coordinate efforts.

F. Italian Northern Adriatic

At the Italian Northern Adriatic DS, apart from the involvement of the Friuli-Venezia Giulia Region (which also serves as the managing authority of the Designated Site), the representative of the Miramare Marine Protected Area, and a representative of the cooperative responsible for some of the monitoring activities, there is currently no participatory process or co-management framework in place. This is partly due to an agreement to postpone stakeholder engagement meetings until the results of

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

ongoing monitoring activities, designed to identify site users and assess associated pressures and impacts, are available. These monitoring activities were developed and agreed upon with the managing authority in the context of the BLUE CONNECT project.

G. Burgas Bay

At the Burgas Bay DS, public consultations and discussions have been conducted regarding the draft orders for the Natura 2000 MPAs and the draft MSP plan, though there is currently no co-management set up in place.

H. Central Romanian Coast

In the Central Romanian Coast DS, there is currently no participatory process or co-management set-up in place.

I. Raet National Park

At the Raet National Park DS, a process towards a co-management set-up is in place through the establishment of a National Park Board[28] in 2017. The board is composed of municipal mayors from Tvedestrand and Arendal (representing the Labour Party), Grimstad (Christian Party), as well as the County Mayor representing Agder County Municipality (Labour Party). The private sector is represented by major landowners from Arendal and Grimstad. The board is responsible for receiving applications and making decisions, handling complaints, preparing plans on relevant management topics, carrying out management and restoration actions to safeguard conservation values, and developing access points and organising activities for visitors. The National Park Board is funded by the Norwegian Environment Agency, with funding divided between the board's operations, the implementation of measures within the protected area, and the organisation of activities for visitors.

A participatory process called "BEVAR RAET" has also been in place since 2020. The initiative aims to enhance collaboration for the conservation of marine life in Agder's marine national park, Raet National Park, with the goal of strengthening ecosystems while ensuring that the local population ('Egdene') can continue to harvest sustainably from the sea in the future. The process involves a wide range of stakeholders, including representatives from the public sector (politicians and administrative staff), the private sector, academia, and civil society. Activities under this initiative include closed group meetings, open public meetings, knowledge gathering, and networking to foster shared understanding and collective action.

Key enablers in this participatory process include the high degree of involvement and participation from local stakeholders and public authorities at several levels, many of whom hold decision-making power. Active outreach efforts, such as open public meetings within local communities and media coverage, are expected to improve the

[28] https://www.nasjonalparkstyre.no/Raet/

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

level of acceptance of conservation measures. However, a key barrier to influencing conservation measures through this participatory process is the absence of formal authority, meaning the initiative lacks actual decision-making power. Additionally, some stakeholders are not represented, such as actors from commercial sectors beyond fisheries (e.g. tourism, cargo/shipping, renewable energy, aquaculture), representatives of younger generations, or those representing immaterial values. This underrepresentation is due in part to invited stakeholders not attending, uncertainty about who could represent the missing perspectives, and a general lack of awareness about which perspectives are absent.

J. Vlaamse Banken MPA: Hinder Banks

In the Vlaamse Banken DS, several participatory processes have taken place or are ongoing (see Table 78). Six of these are structured as public consultations aimed at collecting advice and opinions on specific draft documents related to the implementation of EU directives, such as Natura 2000, MSP, and the MSFD. These consultations are conducted online, allowing all citizens to submit comments and feedback within a defined timeframe.

Two other participatory processes focus on more targeted policy areas. One concerns the identification of priority measures for Natura 2000 management and their alignment with European funding sources. This process involved stakeholders from academia and research institutes, representatives of the blue economy sector, and policy makers. Stakeholders were invited to provide advice and input to decide on priority measures.

The other relates to the implementation of fisheries management measures under Article 11 of the CFP, which allows for the designation of zones where specific measures apply. This process is carried out through multi- and bilateral consultations and stakeholder engagement rounds, with the aim of reaching agreement on the proposed measures and enabling a joint recommendation process.

***Table 78**. Overview of the participatory processes linked with the Vlaamse Banken MPA: Hinder Banks demonstration site.*

Year of initiation	Type of participatory process	Aim
Ongoing	Fishery Management Measures	Article 11 common fishery policy procedure to assign zones with fishery measures
2025	Public consultation Natura 2000	Collect advise and opinions on the draft update of the evaluation of the conservation objectives and assessment of the status of the BPNS
2024	Public consultation MSFD	Collect opinions and advice about the draft update of the socio-economic analysis of the users of the sea space, the evaluation of the environmental status, the definition of 'Good Environmental Status' and the environmental goals for the BPNS

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

2024	Public consultation MSP	Collect opinions and advise on the draft of the update of the BPNS MSP 2026-2034
2024	Co-creation trajectory on Prioritized Action Framework	To determine priority measures for Natura 2000 management and couple them to European funding sources
2021	Public consultation on Measures Program BPNS 2022-2027	Collect advise and opinions on the draft measures program of the BPNS
2021	Public consultation on Management program Natura 2000 2022-2027	Collect advise and opinions on the draft management plans of the Natura 2000 areas in the BPNS
2020	Public consultation on Monitoring program BPNS	Collect advise and opinions on the draft update of the monitoring program of the BPNS

This last participatory process has contributed to increasing the willingness of the fisheries sector to support conservation measures and to engage in efforts towards more sustainable practices.

K. Scottish MPA Network

In the Scottish MPA Network Shetland and Fair Isle IMMA DS, a participatory process was established in 2006 in the form of an advisory group to support the develop of the Shetland Islands' Regional Marine Plan[29]. The aim was to manage Shetland's marine space, and the group contributed to mapping and policy development. Stakeholders involved included representatives from the public and private sectors, academia, and civil society.

The collaborative process was successful and allowed for an effective consultation. All key stakeholders were included and had the opportunity to influence conservation measure or practices.

Annex 7: Tool inventory results

Number of entries per Demonstration Site

Demo Site	Number of entries
Cetacean Migration Corridor	21
Central Romanian Coast	18
Raet	7
Vlaamse Banken	15
Scotland	5
L'Albera	13
Burgas Bay	5
Macaronesia	18

[29] https://www.shetland.uhi.ac.uk/research/marine-spatial-planning/shetland-islands-regional-marine-plan/

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Italian Northern Adriatic	0
Pitiusas	0
Cabo Roche	0
TOTAL	**102**

Number of entries per object type

Object type	Number of entries
Model	31
Monitoring programme	26
Decision support tool / platform	16
Indicator	9
Conceptual framework / guideline	10
Management evaluation tool	5
Other	5
TOTAL	**102**

Primary objective of entries

Object type	Number of entries
Informing and/or assessing conservation actions	39
Informing and/or assessing restoration actions	7
Both	52
Unknown	4
TOTAL	**102**

Implementation stage of entries

Object type	Number of entries
Considered	31
Planned	11
Implemented	58
Unknown	2
TOTAL	**102**

Accessibility of entries

Accessibility	Number of entries
Open access	42
Free access on request	2
Paid access	3
Completely closed	1
NA/unknown	54
TOTAL	**102**

Spatial explicitness of entries

Object type	Number of entries

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Spatially explicit	71
Not spatially explicit	8
NA/Unknown	23
TOTAL	**102**

Temporal explicitness of entries

Object type	Number of entries
Temporally explicit	43
Not temporally explicit	14
NA/Unknown	45
TOTAL	**102**

Annex 8: Data inventory results

Number of entries per Demonstration Site

Demo Site	Number of entries
Cetacean Migration Corridor	23
Central Romanian Coast	93
Raet	74
Vlaamse Banken	31
Scotland	19
L'Albera	34
Burgas Bay	15
Macaronesia	143
Italian Northern Adriatic	2
Pitiusas	0
Cabo Roche	0
TOTAL	**434**

Number of entries per object type

Object type	Number of entries
Datasets & databases	299
Data platforms & catalogues	72
Models	12
Unknown	51
TOTAL	**434**

Number of entries per data type

Data type	Number of entries
Ecological	180
Socio-economic	74
Biogeochemical	41
Physical/abiotic	59

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Spatial regulatory	29
Climate	14
Other	37
TOTAL	**434**

Accessibility of entries

Accessibility	Number of entries
Open access	334
To be requested	40
Other/unknown	60
TOTAL	**434**

Time series

Availability	Number of entries
Time series	147
Not a time series	136
Unknown/not relevant	151
TOTAL	**434**

Future scenarios

Availability	Number of entries
Future scenarios available	25
Future scenarios unavailable	280
Unknown/not relevant	129
TOTAL	**434**

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Annex 9: Survey analysis

A. Cetacean Migration Corridor

Demographics (Q1-Q6):

- 25 participants.
- 84% under 30 years old; 16% aged 30–50-year-olds.
- 80% women.
- 81% live within 20 km of the demonstration site's coastal zone.
- 10% identified as local citizens, 14% as professionals in marine/nature governance, 10% with economic interests in the Cetacean Migration Corridor, 66% chose "other".
- 56% knew about MPAs; 24% partly; 20% did not.

Attitudes towards marine protection (Q6-7; Q10):

- Consensus that marine protection in the DS has or will have a positive local impact.
- Equal proportions (48%) believe the Corridor provides economic benefits or are unsure; one disagreed.
- 72% perceive social benefits from the Corridor; 28% do not know.

Knowledge about demonstration site (Q8-9, Q11-15):

- Top perceived economic benefits: sustainable fisheries (20%), job creation and climate resilience (16%), cultural and heritage preservation (13%).
- Top perceived social benefits: environmental awareness (23%), cultural identity (21%), climate change resilience (12%), and protection of sacred sites (11%).
- 64% were unaware of the site's conservation objectives; 32% were partially aware; one believed no objectives were in place.
- 80% were unaware of any restrictions. Most commonly cited restricted activities: aquaculture (16%), "other" (16%), petroleum extraction (14%), dredging (14%), and commercial transport (9%). In reality, only petroleum extraction and seabed survey activities are under restrictions.

Attitudes towards stricter protection (Q16-20):

- Only one respondent believed current restrictions are fully sufficient; 20% said partially; 32% disagreed; 44% were unsure.
- Majority in favour of stricter protection (68%); 12% were indifferent and 20% required more information.
- Information needs identified to support decision-making: type and location of restricted activities (40%), impacts on nature (30%), local economy (20%), and socio-cultural values (10%).
- 40% expected a positive impact on daily life from stricter restriction; 28% were neutral; 28% needed more information; one expected a negative impact.
- Maritime traffic was mentioned by two participants as a restriction they would like to see implemented.

Participation in conservation decision (Q21):

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- Only 12% of participants are currently involved in decision-making processes; 36% would like to engage but do not know how, 16% are interested but not yet involved, and 32% are not interested in participating.

Key Findings

- ✓ **Limited public participation. The results may not accurately reflect the view and priorities of all stakeholders.**
- ✓ **Survey participants reported limited awareness of conservation measures and restrictions related to the DS.**
- ✓ **Clear consensus that protection measures have or will have a positive impact on the local community.**
- ✓ **Uncertainty about economic benefits from the Cetacean Migration Corridor**
- ✓ **Due to the offshore nature of the site, no communities are directly affected by the DS. It might explain the uncertainty in answers about benefits and regulations.**
- ✓ **Most respondents support stricter protection measures**
- ✓ **Current participation in conservation processes is low although half expressed a willingness to engage.**
- ✓ **Limited awareness of conservation goals and uncertainty about how to participate in decision-making highlights the need for improved outreach.**

B. L'Albera

Demographics (Q1-Q6):

- 79 participants.
- 76% over 50 years old; 20% aged 30–50; 4% under 30 years old.
- 52% women; 47% man.
- 45% live less than 5 km of the demonstration site's coastal zone and 37% between 5-20 km.
- 69% identified as local citizens, 12% as professionals in marine/nature governance, 2% with economic interests in L'Albera; 17% chose "other".
- 87% knew about MPAs; 10% partly; 3% did not.

Attitudes towards marine protection (Q6-7; Q10):

- Almost all respondents (97%) believe that marine protection in the DS has or will have a positive local impact; 3% partly believe it.
- 80% believe that L'Albera MPA provides economic benefits; 5% disagree and 15% do not know.
- 90% perceive social benefits from L'Albera; 4% disagree and 6% do not know

Knowledge about demonstration site (Q8-9, Q11-15):

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- Top perceived economic benefits: sustainable fisheries (22%), cultural/heritage preservation (20%), climate resilience (18%), tourism and recreational activities (14%).
- Top perceived social benefits: environmental awareness (25%), climate change resilience (13%), experience of nature (13%) and protection of sacred sites (12%), cultural identity (12%).
- Half are partly aware of the site's conservation objectives; 28% are not aware; 23% are aware.
- Half are unaware of any restriction and the other half is aware. Most commonly cited restricted activities: dumping/polluting (22%), harvesting marine resources (16%), anchoring (13%).

Attitudes towards stricter protection (Q16-20):

- Only one respondent believed current restrictions are fully sufficient; 16% said partially; 54% disagreed; 28% were unsure.
- Majority in favour of stricter protection (85%); 1% was indifferent and 14% required more information.
- Information needs identified to support decision-making: impacts on nature (45%), type and location of restricted activities (36%), impact on local economy (9%), and on socio-cultural values (9%).
- 63% expected a positive impact on daily life from stricter restriction; 13% were neutral; 22% needed more information; 3% expected a negative impact.
- Dumping/pollution (17%), anchoring (13%), harvesting of marine resources (12%) were the most cited activities on which participants want restrictions.

Participation in conservation decision (Q21):

- 37% of participants are currently involved in decision-making processes; 18% would like to engage but do not know how, 33% are interested but not yet involved, 8% are not interested in participating and 5% are involved but have no interest

Key Findings

- ✓ **Respondents are mainly local public**
- ✓ **Broad support for marine protection and strong believes that L'Albera bring both economic and social benefits**
- ✓ **Survey participants reported moderate knowledge of conservation objective and restriction.**
- ✓ **Strong backing for stricter protection: particularly on pollution, anchoring, and marine resource use.**
- ✓ **Promising basis to increase participation in conservation decision.**

C. Italian Northern Adriatic

Demographics (Q1-Q6):

- 23 participants

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- 9% over 50 years old; 57% aged 30–50; 35% under 30 years old.
- Gender evenly split.
- 57% live less than 5 km of the demonstration site's coastal zone and 30% between 5-20 km, 13% more than 20 km
- 63% identified as local citizens, 19% as professionals in marine/nature governance, 19% chose "other".
- 91% knew about MPAs; 4% partly; 4% did not.

Attitudes towards marine protection (Q6-7; Q10):

- Almost all respondents (83%) believe that marine protection in the DS has or will have a positive local impact; 17% do not know.
- 74% believe that Natura 2000 site Trezze San Pietro e Bardelli provides economic benefits; 26% do not know.
- 65% perceive social benefits from Natura 2000 site Trezze San Pietro e Bardelli; 35% do not know.

Knowledge about demonstration site (Q8-9, Q11-15):

- Top perceived economic benefits: sustainable fisheries (22%), cultural/heritage preservation (16%), tourism and recreational activities (16%), climate resilience (12%) and educational opportunities (12%).
- Top perceived social benefits: Protection of submerged heritage (24%), environmental awareness (18%) climate change resilience (16%), recreation (13%).
- 57% were unaware of the site's conservation objectives, 22% were partially aware, 17% were aware, one believed no objectives were in place.
- 78% were unaware of any restriction, 13% were aware and 9% believed there are no restrictive measure in place. Most commonly cited restricted activities: aquaculture (20%), fisheries (30%, harvesting marine resources (30%), dredging (30%), (unauthorised research (30%).

Attitudes towards stricter protection (Q16-20):

- Only one respondent believed current restrictions are fully sufficient; 9% said partially; 9% disagreed; 78% were unsure.
- Majority in favour of stricter protection (78%); 22% required more information.
- Information needs identified to support decision-making: impact on nature (33%) and local economy (33%), type and location of restricted activities (22%), and impact on socio-cultural values (11%).
- 52% expected a positive impact on daily life from stricter restriction; 9% were neutral; 39% needed more information.
- Dumping/pollution (21%), fisheries (12%), dredging (12%) were the most cited activities on which participants want restrictions.

Participation in conservation decision (Q21):

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- 4% of participants are currently involved in decision-making processes; 17% would like to engage but do not know how, 48% are interested but not yet involved, 26% are not interested in participating and 4% are involved but have no interest.

Key Findings

- ✓ **Respondents mainly represent the local public.**
- ✓ **Survey participants reported high awareness about MPAs but limited knowledge of site-specific conservation measures and restrictions.**
- ✓ **Broad support for marine protection and recognition of its economic and social benefits.**
- ✓ **While most are unsure about the sufficiency of current measures, stronger protection is widely supported.**
- ✓ **Cautious optimism regarding the impact of stricter protection on personal life.**
- ✓ **Very limited current participation in conservation decisions, but strong interest in getting involved.**

D. Burgas Bay

Demographics (Q1-Q6):

- 169 participants.
- 27% over 50-year-old; 63% aged 30–50; 9% under 30.
- 67% women; 33% men
- 67% live within 5 km of the site coast; 31% within 5–20 km; 22% over 20 km.
- 67% identified as local citizens; 12% as professionals in marine/nature governance; 1% with economic interests; 20% selected “other”.
- 69% aware of MPAs; 25% partly; 6% not aware.

Attitudes towards marine protection (Q6-7; Q10):

- 90% believe marine protection in Burgas Bay has or will have a positive local impact; 8% partly; 2% unsure or disagree
- 76% believe the site provides economic benefits; 17% unsure; 7% disagree
- 82% perceive social benefits; 14% unsure; 4% disagree

Knowledge about demonstration site (Q8-9, Q11-15):

- Top perceived economic benefits: tourism/recreation (24%), sustainable fisheries (18%), aquaculture (13%)
- Top perceived social benefits: recreation (19%), traditional fishing (15%), nature immersion (13%), cultural identity (12%)
- 39% unaware of conservation objectives; 49% partly aware; 11% aware
- 62% unaware of restrictions; 36% aware; 3% believe none exist. Most cited restrictions: dumping/pollution (26%), dredging (23%), harvesting marine resources (18%), and fisheries (13%)

Attitudes towards stricter protection (Q16-20):

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- Only 2% find current restrictions sufficient; 24% partly; 36% disagree; 38% unsure.
- 69% support stricter protection; 29% need more information; 2% indifferent or opposed.
- Information needs: type and location of restricted activities (35%), impact on economy (22%) and nature (21%), socio-cultural values (19%)
- 55% expect a positive personal impact; 15% neutral; 30% need more information.
- Top activities participants want restricted: dumping/pollution (28%), dredging (18%), harvesting marine resources (13%).

Participation in conservation decision (Q21):

- 13% currently involved; 45% want to engage but don't know how; 27% interested but not yet involved; 10% not interested; 5% involved but not interested.

Key Findings

- ✓ **Most respondents live near the site and are familiar with MPAs.**
- ✓ **Strong support for marine protection, with broad recognition of local economic and social benefits.**
- ✓ **Participants report moderate awareness of site-specific conservation objectives and low awareness on restrictions, highlighting a need for better outreach.**
- ✓ **Cautious optimism regarding the impact of stricter protection on personal life.**
- ✓ **Low current participation, but high interest in engaging in conservation decision-making.**

E. Central Romanian site

Demographics (Q1-Q6):

- 26 participants.
- 23% over 50-year-old; 35% aged 30–50; 42% under 30.
- 73% women; 27% men.
- 50% live within 5 km of the site coast; 27% within 5–20 km; 23% over 20 km.
- 50% identified as local citizens; 10% as professionals in marine/nature governance; 10% with economic interests; 30% selected "other"
- 88% aware of MPAs; 4% partly; 8% not aware.

Attitudes towards marine protection (Q6-7; Q10):

- Almost all respondents (88%) believe that marine protection in Central Romanian Coast demo site has or will have a positive local impact; 12% believe partly.
- 69% believe that the demo site provides economic benefits; 12% disagree and 19% do not know.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- 96% perceive social benefits from in Central Romanian Coast demo site; 4% disagree.

Knowledge about demonstration site (Q8-9, Q11-15):

- Top perceived economic benefits: sustainable fisheries (20%), aquaculture (17%), research opportunities and grants (15%), tourism and recreational activities (14%), job creation (11%) and cultural/heritage preservation (11%)
- Top perceived social benefits: recreation (24%), environmental awareness (12%), protection of archaeological sites (12%), cultural identity (12%)
- 38% are partly aware of the site's conservation objectives; 19% are not aware; 42% are aware
- 42% are unaware of any restriction and 58% is aware. Most commonly cited restricted activities: dumping/polluting (20%), dredging (15%), commercial transport (15%), harvesting marine resources (13%), fisheries (13%).

Attitudes towards stricter protection (Q16-20):

- 12 % find current restrictions sufficient; 42% partly; 19% disagree; 27% unsure.
- 81% support stricter protection; 19% need more information
- Information needs: type and location of restricted activities (21%), impact on economy (29%) and nature (29%), socio-cultural values (17%) and 7% are interested by other information.
- 62% expect a positive personal impact; 19% neutral; 19% need more information.
- Top activities participants want restricted: dumping/pollution (21%), commercial transport (11%), anchoring (10%), recreational activities (10%).

Participation in conservation decision (Q21):

- 31% currently involved; 46% want to engage but don't know how; 12% interested but not yet involved; 8% not interested; 4% involved but not interested.

Key Findings

- ✓ **Most respondents live near the site and are familiar with MPAs**
- ✓ **Strong support for marine protection, with broad recognition of local social benefits**
- ✓ **Participants report substantial knowledge of site-specific objectives and moderate about restrictions.**
- ✓ **Cautious optimism regarding the impact of stricter protection on personal life**
- ✓ **Low current participation, but high interest in engaging in conservation decision-making**
- ✓ **Promising basis to increase participation in conservation decision**

F. Raet National Park

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Demographics (Q1-Q6):

- 193 participants.
- The gender distribution was evenly split between men and women.
- 65% were over 50 years old, 30% were between 30-50, and only 5% were under 30.
- Most (82%) were local residents near Raet NP. 5% were engaged in economic activities within the NP, and 4% worked in marine or nature governance. 8% (16 individuals) identified with multiple categories.
- Most respondents (93%) lived within 5 km of the coast.
- only 6% had not previously heard about marine national parks.

Attitudes towards marine protection (Q6-7; Q10):

- 67% agreed, and 22% partly agreed that Raet NP positively impacts the local coastal community.
- While support for conservation was high, only 47% believed Raet NP could provide economic benefits; 28% disagreed, and 25% were unsure.
- 81% believed Raet NP offers social, cultural, or environmental benefits, while 15% disagreed and 5% were uncertain. It appears that respondents believe the NP holds a greater potential for social, cultural, and environmental benefits than economic benefits to the local community.
- Responses from those engaged in NP-related economic activities mirrored the general trend.

Knowledge about demonstration site (Q8-9, Q11-15):

- The top economic benefits identified were tourism, outdoor activities, and recreation (26%), research opportunities and grants (16%), cultural heritage preservation (15%), sustainable fisheries (14%), and climate resilience (11%). One respondent mentioned public health as an additional benefit.
- The top social, cultural, and environmental benefits identified were recreation and outdoor activities (27%), nature experiences (21%), environmental awareness (15%), preservation of cultural heritage (11%), and traditional fishing practices (7%).
- Only 16% were aware of Raet NP's conservation goals, 47% were partly aware, and 38% were unaware.
- Yet, 77% were familiar with restrictions.
- Among those engaged in NP-related economic activities, the awareness was higher. Only one individual was unaware of the conservation goals, while seven were aware of the restrictions.
- The respondents thought the following restricted activities exist today: dumping/pollution (25%), dredging (19%), fisheries (13%), harvesting marine resources (8%), and use of drones and underwater vehicles (7%). Restrictions identified only partly reflect the actual restrictions of the Raet NP.

Attitudes towards stricter protection (Q16-20):

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- 22% said current restrictions were sufficient, 28% disagreed, 19% answered "partly", and 31% were unsure.
- Yet, when asked about their attitude towards stricter protection, 51% were in favour, 19% opposed, 7% were indifferent, and 23% needed more information. Respondents engaged in NP-related economic activities replied similarly.
- Regarding the pros and cons of stricter conservation measures, the respondents indicated that they would need more information about restrictions on human activities (43%), the impacts on local nature (32%), and the social and cultural consequences (18%). Only 6% were concerned about the effects on the local economy.
- Respondents suggested stricter regulations on dumping and polluting (26%), dredging (16%), using drones and underwater vehicles (11%), commercial transport and traffic (10%), and unauthorised research and sampling (7%).
- Regarding how stricter protection of the NP would impact the respondents' daily lives, the answers were evenly spread: 21% expected positive effects, 16% anticipated negative impacts, 37% were neutral, and 31% needed more information.
- Among the 10 respondents engaged in economic activities, 3 expected positive effects, 4 were neutral, 3 expected negative impacts, and 1 required more information.

Participation in conservation decision (Q21):

- 8% of participants are currently involved in decision-making processes; 28% would like to engage but do not know how, 31% are interested but could not, 24% are not interested in participating and 10% are involved but have no interest.

Key Findings

- ✓ **Most respondents are local.**
- ✓ **Awareness of conservation goals and measures is low, but support for conservation is strong.**
- ✓ **There is also support for stricter regulations. A few respondents questioned whether the nature protection status leads to real changes.**
- ✓ **The results suggest a need for more information on the impacts of stricter measures.**
- ✓ **Participants involved in economic activities related to the site showed greater awareness of conservation goals and restrictions. This suggests that those with direct interests are more informed.**
- ✓ **There is a clear interest in greater participation in decision-making.**
- ✓ **Low awareness of conservation goals and uncertainty about how to participate point to a need for improved outreach.**
- ✓ **People perceive the park to be more strictly protected than it actually is.**

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

G. Vlaamse Baken MPA: Hinder Banks

Demographics (Q1-Q6):

- 132 participants
- 78% over 50 years old; 11% aged 30–50; 1% under 30 years old
- 52% women; 48% man
- 62% live less than 5 km of the demonstration site's coastal zone and 8% between 5-20 km; 30% more than 20 km
- 68% identified as local citizens, 8% as professionals in marine/nature governance, 1% with economic interests in Vlaamse Banken; 24% chose "other"
- 61% knew about MPAs; 19% partly; 20% did not

Attitudes towards marine protection (Q6-7; Q10):

- Majority of respondents (82%) believe that marine protection in the DS has or will have a positive local impact; 16% believe partly; 2% disagree.
- 70% believe that Vlaamse Banken provides economic benefits; 10% disagree and 20% do not know.
- 73% perceive social benefits from Vlaamse Banken; 6% disagree and 21% do not know.

Knowledge about demonstration site (Q8-9, Q11-15):

- Top perceived economic benefits: sustainable fisheries (27%), aquaculture (18%), climate resilience (14%), tourism and recreational activities (13%).
- Top perceived social benefits: environmental awareness (24%), protection of sacred sites (16%), traditional fisheries (14%), climate change resilience (11%).
- 38% are partly aware of the site's conservation objectives; 48% are not aware; 14% are aware.
- Majority (83%) are unaware of any restriction; 17% aware and 1% believe there are no restrictive activity. Most commonly cited restricted activities: dredging (19%), fisheries (15%), dumping/pollution (12%), anchoring (12%).

Attitudes towards stricter protection (Q16-20):

- 11% of respondent believed current restrictions are fully sufficient; 22% said partially; 17% disagreed; 50% were unsure
- 60% in favour of stricter protection; 4% was indifferent; 2% opposing; and 34% required more information
- Information needs identified to support decision-making: impacts on nature (38%), type and location of restricted activities (31%), impact on local economy (17%), and on socio-cultural values (13%)
- 41% expected a positive impact on daily life from stricter restriction; 26% were neutral; 30% needed more information; 3% expected a negative impact
- Dumping/pollution (19%), dredging (11%), unauthorised research (10%), fisheries (10%) were the most cited activities on which participants want restrictions.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Participation in conservation decision (Q21):

- 7% of participants are currently involved in decision-making processes; 38% would like to engage but do not know how, 18% are interested but not yet involved, 27% are not interested in participating and 10% are involved but have no interest.

Key Findings

- ✓ **Mostly local respondents**
- ✓ **Broad support for marine protection**
- ✓ **Participants report moderate awareness of site-specific objectives and limited awareness about restrictions, highlighting the need for improved communication and outreach**
- ✓ **Moderate support for stronger restrictions**
- ✓ **Low awareness about potential impacts from stricter protection**
- ✓ **Participation in decision making toward conservation is very low, hinting at a potential connection with low awareness**

H. Scottish MPA Network

In the Scottish MPA Network DS, 2 surveys were disseminated one focusing on the study site that BLUE CONNECT will focus on (the Shetland and Fair Isle Important Marine Mammal Area), and the other one asking questions related to the entire Scottish MPA Network. People were invited to do the survey that was most applicable to them, and Shetland residents of Shetland were also told that they could complete both surveys.

Shetland results:

Demographics (Q1-Q6):

- 77 participants.
- 45% over 50-year-old; 39% aged 30–50; 16% under 30.
- 61% women; 36% men; 3% other.
- 79% live in Shetland; 16% have visited Shetland; 5% never been to Shetland
- 37% identified as local citizens; 31% have conservation interest in the Shetland and Fair Isle; 17% work with nature governance or conservation; 8% don't live there but is interested; 5% have economic interest within the demo site; 2% is other.
- 87% aware of MPAs; 6% partly; 6% not aware.

Attitudes towards marine protection (Q6-7; Q10):

- 74% of participants believe that marine protection in Shetland and Fair Isle has or will have a positive local impact; 19% believe partly; 4% unsure; 3% disagree.
- 75% believe that the demo site provides economic benefits; 8% disagree and 17% do not know.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- 71% perceive social benefits from the demo site; 9% disagree and 19% are unsure.

Knowledge about demonstration site (Q8-9, Q11-15):

- Top perceived economic benefits: tourism and recreational activities (52%), sustainable fisheries (14%), research opportunities (13%), educational activities (12%), cultural/heritage preservation (10%).
- Top perceived social benefits: environmental awareness (26%), pride and care for local area (18%), recreation (14%), cultural identity (10%).
- 27% are partly aware of the site's conservation objectives; 38% are not aware; 35% are aware.
- 49% unaware of any restriction and 48% aware; 2% affirm that there are no restrictive measures in place. Most commonly cited restricted activities: fisheries (16%), aquaculture (13%), dumping/pollution (13%), dredging (12%), harvesting marine resources (12%).

Attitudes towards stricter protection (Q16-20):

- 9% find current restrictions sufficient; 34% partly; 25% disagree; 32% unsure
- 60% support stricter protection; 32% need more information; 4% indifferent and 4% opposing.
- Information needs: type and location of restricted activities (27%), impact on economy (21%) and nature (27%), socio-cultural values (21%) and 4% are interested by other information.
- 62% expect a positive personal impact; 19% neutral; 19% need more information.
- Top activities participants want restricted: dumping/pollution (22%), dredging (15%), fisheries (10%), aquaculture (10%).

Participation in conservation decision (Q21):

- 30% currently involved; 29% want to engage but don't know how; 19% interested but not yet involved; 14% not interested; 8% involved but not interested.

<u>Scotland wide MPA survey result:</u>

Demographics (Q1-Q6):

- 113 participants.
- 37% over 50-year-old; 37% aged 30–50; 26% under 30.
- 70% women; 28% men; 2% other.
- 59% live within 5 km of the site coast; 12% within 5–20 km; 28% over 20 km
- 34% have conservation interest in Scottish MPAs; 25% work with nature governance or conservation; 20% don't live there but is interested; 15% identified as local citizens; 2% have economic interest within the demo site; 2% is other.
- 90% aware of MPAs; 10% partly.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Attitudes towards marine protection (Q6-7; Q10):

- 74% of participants believe that marine protection within Scottish MPAs has or will have a positive local impact; 18% believe partly; 8% unsure.
- 81% believe that the demo site provides economic benefits; 7% disagree and 12% do not know.
- 83% perceive other benefits from the demo site; 4% disagree and 12% are unsure.

Knowledge about demonstration site (Q8-9, Q11-15):

- Top perceived economic benefits: tourism and recreational activities (29%), sustainable fisheries (15%), research opportunities (13%), climate resilience (11%), cultural heritage (10%).
- Top perceived social benefits: environmental awareness (71%), pride and care for local area (13%), mental health (11%), community involvement (11%), resilience to climate change (10%).
- 44% are partly aware of the site's conservation objectives; 28% are not aware; 26% are aware; 2% believe conservation objectives are not in place.
- 56% unaware of any restriction and 38% aware; 6% affirm that there are no restrictive measures in place. Most commonly cited restricted activities: fisheries (15%), aquaculture (13%), dredging (14%), dumping/polluting (13%), harvesting marine resources (10%).

Attitudes towards stricter protection (Q16-20):

- 3% find current restrictions sufficient; 22% partly; 46% disagree; 29% unsure.
- 79% support stricter protection; 16% need more information; 5% indifferent.
- Information needs: type and location of restricted activities (39%), impact on economy (20%) and nature (29%), socio-cultural values (12%) .
- 54% expect a positive personal impact; 27% neutral; 18% need more information; 2% expect negative personal impact.
- Top activities participants want restricted: dumping/pollution (17%), dredging (17%), fisheries (12%), aquaculture (11%).

Participation in conservation decision (Q21):

- 29% currently involved; 36% want to engage but don't know how; 21% interested but not yet involved; 6% not interested; 7% involved but not interested.

Key Findings

- ✓ **Mostly local respondents**
- ✓ **Marine protection is broadly seen as beneficial, particularly for tourism and environmental awareness**
- ✓ **Participants reported substantial awareness of site-specific objectives and moderate restrictions.**
- ✓ **Moderate support for stronger restrictions, one third requires more information.**

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- ✓ **The proportion of respondents who reported knowing the site's conservation objectives was similar to the share currently involved in decision-making, suggesting a potential link between awareness and engagement.**

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Annex 10: Supporting background material

Demonstration sites	Existing/past projects	Links and articles
Cetacean Migration Corridor	• ASI (ACCOBAMS Survey Initiative) (2018-2019; ACCOBAMS 2021) • LIFE INDEMARES (2009 - 2014), LIFE INTEMARES (2017 – 2025) • AHAB (2020)	• ACCOBAMS (2016). Overview of the Noise Hotspots in the ACCOBAMS Area, Part I - Mediterranean Sea. • ACCOBAMS, 2021. Estimates of abundance and distribution of cetaceans, marine mega-fauna and marine litter in the Mediterranean Sea from 2018-2019 surveys. By Panigada S., Boisseau O., Canadas A., Lambert C., Laran S., McLanaghan R., Moscrop A. Ed. ACCOBAMS - ACCOBAMS Survey Initiative Project, Monaco, 177 pp. • Chicote C.A, Amigó N., Andón N., Vázquez J.A, Cañadas A., Gazo M., Informe técnico AHAB 2020: Cetáceos de Buceo Profundo y otras especies en el sector norte del Corredor de Migración de Cetáceos del Mediterráneo. 59pp Fundación Biodiversidad • IWC (2022). Strategic Plan to Mitigate the Impacts of Ship Strikes on Cetacean Populations: 2022-2032. • Izquierdo-Serrano et al (2022). Assessment of the interactions between cetaceans and fisheries at the south of the Cetacean Migration Corridor and neighbouring waters (Western Mediterranean). • OceanCare (2021). Quiet Waters for Whales and Dolphins: The one-time opportunity to avoid, reduce and mitigate noise-generating activities in the Mediterranean Cetacean Migration Corridor. • OceanCare (2024). Analysis of maritime traffic in the North-Western Mediterranean Sea for 2023. • Virgili et al. (2024) Seasonal distribution of cetaceans in the European Atlantic and Mediterranean waters. • IMO (2023). Designation of the North-Western Mediterranean Sea as a Particularly Sensitive Sea Area. Resolution MEPC.380(80), adopted 7 July 2023. • Ley 39/2015, de 1 de octubre, del Procedimiento Administrativo Común de las Administraciones Públicas. • Planes de Ordenación del Espacio Marítimo (POEM, 2023)

		• Real Decreto 139/2011, de 4 de febrero, para el desarrollo del Listado de Especies Silvestres en Régimen de Protección Especial y del Catálogo Español de Especies Amenazadas • Real Decreto 1599/2011, de 4 de noviembre, por el que se establecen los criterios de integración de los espacios marinos protegidos en la Red de Áreas Marinas Protegidas de España • Real Decreto 699/2018, de 29 de junio, por el que se declara Área Marina Protegida el Corredor de migración de cetáceos del Mediterráneo, se aprueba un régimen de protección preventiva y se propone su inclusión en la Lista de Zonas Especialmente Protegidas de Importancia para el Mediterráneo (Lista ZEPIM) en el marco del Convenio de Barcelona. • Real Decreto 1056/2022, de 27 de diciembre, por el que se aprueba el Plan Director de la Red de Áreas Marinas Protegidas de España y los criterios mínimos comunes de gestión coordinada y coherente de la Red.
Italian Northern Adriatic		• Natura 2000 – Standard data form (16/01/2025) Trezze San Pietro e Bardelli (IT3330009 - SPA/SCI) • https://biostreamportal.net/catalog/ • https://eaglefvg.regione.fvg.it/eagle/main.aspx?configuration=guest
L'Albera	• Stewardship agreement between SUBMON, Llançà Municipality and the Government of Catalonia to improve the environmental status of the area (2021-ongoing). • Pilot study to replant recovered *Posidonia oceanica* shoots and involving the local community in the process (2022-2023)	• Serrano, O., Lavery, P. S., López-Merino, L., Ballesteros, E. & Mateo, M. A. Location and associated carbon storage of erosional escarpments of seagrass Posidonia mats. *Front Mar Sci* **3**, (2016). • Lavery, P. S., Mateo, M. Á., Serrano, O. & Rozaimi, M. Variability in the Carbon Storage of Seagrass Habitats and Its Implications for Global Estimates of Blue Carbon Ecosystem Service. PLoS One 8, (2013). • Miyajima, T. et al. Geographic variability in organic carbon stock and accumulation rate in sediments of East and Southeast Asian seagrass meadows. Global Biogeochem Cycles 29, 397–415 (2015). • Campbell, J. E., Lacey, E. A., Decker, R. A., Crooks, S. & Fourqurean, J. W. Carbon Storage in Seagrass Beds of Abu Dhabi, United Arab Emirates. Estuaries and Coasts 38, 242–251 (2015). • Carrió, C. D. ROV-Based Ecological Study and Management Proposals for the Offshore Marine Protected Area of Cap de Creus (NW Mediterranean). www.tdx.cat.

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

		• Cheminée, A. *et al.* Shallow rocky nursery habitat for fish: Spatial variability of juvenile fishes among this poorly protected essential habitat. *Mar Pollut Bull* 119, 245–254 (2017). • Muñoz, M., Lloret, J. & Vila, S. Effects of artisanal fisheries on the scorpaenids (Scorpaena spp.) reproduction in the marine protected area of Cap de Creus (NW Mediterranean). Fish Res 138, 146–151 (2013). • Font, T. & Lloret, J. Biological implications of recreational shore angling and harvest in a marine reserve: The case of Cape Creus. *Aquat Conserv* 21, 210–217 (2011). • Lloret, J. *et al.* Spearfishing pressure on fish communities in rocky coastal habitats in a Mediterranean marine protected area. *Fish Res* 94, 84–91 (2008). • Lloret, J., Zaragoza, N., Caballero, D. & Riera, V. Biological and socioeconomic implications of recreational boat fishing for the management of fishery resources in the marine reserve of Cap de Creus (NW Mediterranean). *Fish Res* **91**, 252–259 (2008). • Carreño, A. & Lloret, J. The vulnerability of fish and macroinvertebrate species with bioactive potential in a Mediterranean marine protected area. *Aquat Conserv* **31**, 1334–1345 (2021). • Sardá, R., Rossi, S., Martí, X. & Gili, J. M. Marine benthic cartography of the Cap de Creus (NE Catalan Coast, Mediterranean Sea). Sci Mar 76, 159–171 (2012). • Dacosta, J. M., Pontes, M., Ollé, A. & Aguilar, L. Seguiment de mol·luscs opistobranquis a la platja de Caials (Cadaqués, Alt Empordà). Contribució al catàleg del Parc Natural de Cap de Creus. *Annals de l'Institut d'Estudis Empordanesos* **40**, 107–130 (2009). • Piazzi, L., Balata, D. & Cinelli, F. Epiphytic macroalgal assemblages of Posidonia oceanica rhizomes in the western Mediterranean. *Eur J Phycol* **37**, 69–76 (2002). • Telesca, L. et al. Seagrass meadows (Posidonia oceanica) distribution and trajectories of change. Sci Rep 5, (2015). • Gili, J.-M. *et al. CARACTERIZACIÓN FÍSICA Y ECOLÓGICA DEL ÁREA MARINA DEL CAP DE CREUS Informe CSIC ProyectoLIFE+INDEMARES*. (2011).
Burgas Bay	Large scale RESToration of COASTal ecosystems through rivers to sea connectivity - ID: 101037097	• Dimitar Berov , Stefania Klayn , Diana Deyanova , Ventzislav Karamfilov , 2022, Current distribution of Zostera seagrass meadows along the Bulgarian Black Sea coast (SW Black Sea, Bulgaria) (2010-2020)

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

	“Натура 2000 в Черно Море“ - BG16M1OP002-3.005 на оперативна програма „Околна среда 2014-2020 г.	• Maritime Spatial Plan of the Republic of Bulgaria 2021-2035 https://www.ncrdhp.bg/en/maritime-spatial-plan-of-the-republic-of-bulgaria-for-the-period-2021-2035/ • Maritime Strategy of the Republic of Bulgaria https://www.moew.government.bg/en/water/marine-environment/marine-strategy-of-republic-of-bulgaria/ • Stancheva, Margarita, et al. "CASE STUDY 3 BURGAS (LAND-SEA INTERACTIONS)." Report on WP1, Activity 1 (2017): 126. • Unified Information System for NATURA 2000 https://natura2000.egov.bg/EsriBg.Natura.Public.Web.App • АКТУАЛИЗИРАНА ОЦЕНКА НА СЪСТОЯНИЕТО НА МОРСКАТА ОКОЛНА СРЕДА, 2021, Актуализация на първа част от Морската стратегия, съгласно чл. 8, чл. 9 и чл. 10 (2012-2017) • Беров Д., Карамфилов В., В. Бисерков, С. Клайн.2018. Анализ на състоянието на морската околна среда 2017 година. • Гл. ас. д-р Радослава Ив. Бекова, Секция „Биология и екология на морето“, Институт по океанология – БАН, гр. Варна , 2020 - Българският риболов и аквакултури в Черно море – икономическо значение, екологично въздействие и природни фактори на влияние • Карамфилов, В., Беров, Д., Пехливанов, Л., Недков, С., Василев, В., Братанова-Дончева, С., Чипев, Н., Гочева, К. (2017) Методика за оценка и картиране на състоянието на морските екосистеми и техните услуги в България. http://eea.government.bg/bg/ecosystems/B9MARINE_BG_PRINT.pdf • Национален доклад на България по чл. 8 - първоначална оценка на състоянието на морската околна среда https://cdr.eionet.europa.eu/bg/eu/msfd8910/msfd4text/envubapw/art.8_I_SUMMARY_BG_1_.pdf • Спиридонова, Ю. (2021) Морски пространствен план на Република България 2021-2035: Морски икономически дейности. София. Available at: http://mspbg.ncrdhp.bg/?pp=3&lg=bg. • Information system for protected areas from the ecological network Natura 2000
Central Romanian Coast	• MSP4BIO	

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Scottish MPA Network	• https://www.marinemammalhabitat.org/wp-content/uploads/imma-factsheets/NorthEastAtlanticOcean/Shetland-and-Fair-Isle-NorthEastAtlanticOcean.pdf • Pearson, H. C., Roman, J., McCauley, D. J., & Baumgartner, M. F. (2022). Whales in the carbon cycle: Can recovery remove carbon dioxide? *Trends in Ecology & Evolution*, 37(12), 1061–1071. https://doi.org/10.1016/j.tree.2022.10.012 • https://www.shetlandmarinemammals.com/how-to-get-involved/i-want-to-read-more • https://drive.google.com/file/d/1sEMHbp4um9dixjKMLeBGNVYOVRrdl6t6/view • https://doi.org/10.3389/fcosc.2024.1366064 • https://www.int-res.com/abstracts/ab/v13/ab00353 • https://doi.org/10.1002/aqc.1030 • https://doi.org/10.1051/alr:2007009 • https://doi.org/10.3354/ab00637 • https://www.researchgate.net/publication/237714054_KILLER_WHALES_ORCINUS_ORCA_IN_UK_WATERS • https://doi.org/10.1111/mam.12168 • https://doi.org/10.1111/mms.12750 • https://doi.org/10.1017/S0025315414000800 • https://doi.org/10.1017/S0025315414000277 • https://pureadmin.uhi.ac.uk/ws/files/23586193/Predation_in_the_Anthropocene_Harbour_Seal_Phoca_vitulina_.pdf • https://research-repository.st-andrews.ac.uk/handle/10023/30686 • https://ecopreds.com/ • https://www.yumpu.com/en/document/view/65508209/scottish-killer-whale-orcinus-orca-photo-id-catalogue-2021-working3 • https://pure.uhi.ac.uk/en/publications/dyadic-interspecific-interaction-between-a-harbour-seal-phoca-vit • https://pure.uhi.ac.uk/en/publications/previously-undocumented-long-finned-pilot-whale-globicephala-mela • https://www.shetland.uhi.ac.uk/research/marine-spatial-planning/shetland-islands-regional-marine-plan/

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Vlaamse Banken MPA: Hinder Banks	• MSP4BIO • BLUE4ALL	• De Mesel I., D. Kapasakali, F. Kerckhof, L. Vigin, G. Lacroix, L. Barbut and S. Degraer (2018). Ostrea edulis restoration in the Belgian part of the North Sea: Feasibility study. Royal Belgian Institute of Natural Sciences, Operational Directorate Natural Environment, Marine Ecology and Management. pp. 89. • Pecceu E., Paoletti S., Van Hoey G., Vanelslander B., Verlé K., Degraer S., Van Lancker V., Hostens K. Polet H. (2021) Scientific background report in preparation of fisheries measures to protect the bottom integrity and the different habitats within the Belgian part of the North Sea. ILVO. • Verlé, K., Pecceu, E., & Van Hoey, G. (2023). Analyses of fishing activities in the Belgian part of the North Sea, Flemish banks and proposed management areas for seafloor integrity. ILVO • SPF Santé publique, Sécurité de la Chaîne alimentaire et Environnement. (2024). *Vision à long terme, objectifs et indicateurs et choix stratégiques en matière d'aménagement spatial – PAEM 2026-2034 – Annexe 2*. Bruxelles, Belgique. Disponible à l'adresse: https://www.health.belgium.be/sites/default/files/uploads/fields/fpshealth_theme_file/bijlage_2_publieksraadpleging_fr.pdf
Raet National Park	• Long-term replicated before-after control-impact (BACI) study, assessing effects of lobster reserves on lobster population, with yearly monitoring since prior to establishment of reserves (2004) and including control areas and one site in Raet. Many spin-off projects and published articles, for example Knutsen et al. 2022: https://www.sciencedirec	• Norwegian Directorate of Fisheries (2024) “Marine Protected Areas” https://www.fiskeridir.no/English/Coastal-management/Marine-protected-areas (Accessed 26.11.24) • Raet National Park Regulation (2016) Forskrift om vern av Raet nasjonalpark, Tvedestrand, Arendal og Grimstad kommuner, Aust-Agder. FOR-2016-12-16-1632 . https://lovdata.no/dokument/LF/forskrift/2016-12-16-1632 • The Marine Resources Act (2009) Lov om forvaltning av viltlevande marine ressursar (havressurslova). LOV-2008-06-06-37 https://www.fiskeridir.no/English/Fisheries/Regulations/The-marine-resources-act • Nature Diversity Act (2009) Lov om forvaltning av naturens mangfold (Naturmangfoldsloven). LOV-2022-06-17-64. https://lovdata.no/dokument/NL/lov/2009-06-19-100 • Grorud-Colvert et al. (2021) The MPA Guide: A framework to achieve global goals for the ocean. Science. DOI:10.1126/science.abf0861

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

t.com/science/article/pii/S0308597X21005194
- MOVE (IMR): https://www.biodiversa.eu/2023/04/19/move/ … Collaboration between researchers, students, managers and users to understand how large predatory fish use coastal ecosystems. They will work on recommendation for conservation.
- MARHAB (IMR) https://cordis.europa.eu/project/id/101135307 *MARHAB's objective is to improve the conservation status of marine ecosystems by demonstrating an ecosystem dynamics approach to restoration and maintenance of protected habitats*
- EURockFish (IMR): https://www.biodiversa.eu/biodiversity-monitoring/pilot/
- Seabird MPA project (USN, IMR++)

- Salmonids and Fresh-Water Fish Act (1993) Lov om laksefisk og innlandsfisk mv. (lakse- og innlandsfiskloven). LOV-1992-05-15-47 https://lovdata.no/dokument/NL/lov/1992-05-15-47
- Integrated Management of the Marine Environment of the North Sea and Skagerrak (Management Plan) — Meld. St. 37 (2012–2013) https://www.regjeringen.no/en/dokumenter/meld.-st.-37-2012-2013/id724746/?docId=STM201220130037000DDDEPIS&ch=1
- Regional Water Management Plan (2022) Regional vannforvaltningsplan for Agder vannregion 2022-2027 https://www.vannportalen.no/vannregioner/agder/regional-vannforvaltningsplan-for-agder-vannregion-2022-2027/
- Caroline Ward, Lindsay C. Stringer, George Holmes (2018) Protected area co-management and perceived livelihood impacts, Journal of Environmental Management, Volume 228, Pages 1-12, ISSN 0301-4797 https://doi.org/10.1016/j.jenvman.2018.09.018.
- Berkes, F (2009) Evolution of co-management: role of knowledge generation, bridging organizations and social learning. J. Environ. Manag., 90 (5) (2009), pp. 1692-1702 https://doi.org/10.1016/j.jenvman.2008.12.001
- Borrini-Feyerabend et al., (2012) Governance of Protected Areas: from Understanding to Action Online. Gland, Switzerland. Available from: http://citeseerx.ist.psu.edu/viewdoc/summary?doi=10.1.1.394.4330
- IUCN on co management: https://portals.iucn.org/library/sites/library/files/resrecfiles/WCC1_REC_042_COLLABORATIVE_MANAGEMENT_FOR_CONSERVA.pdf+ https://portals.iucn.org/library/node/8547
- NRK (2021) Norge sier havet er vernet – samtidig pågår det utbredt fiske https://www.nrk.no/norge/norge-sier-havet-er-vernet-_-samtidig-pagar-det-utbredt-fiske-1.15442211
- https://agderfk.no/vare-tjenester/klima-natur-og-friluftsliv/marin-forvaltning/

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

	https://www.usn.no/english/research/projects/other-projects/seabird-mpa/	
Macaronesia	• **Blue Azores:** (https://pt.blueazores.org/). • **PaMAR** (Cape Verde); • **LIFE+INDEMARES** Protection of benthic communities; reduced disturbance of critical habitats (https://www.indemares.es/); • **Marine SABRES** • **Project PHAROS** (Conservation of marine biodiversity and restoration of degraded ecosystems); • **RedPROMAR**, Monitoring of marine biodiversity, protection of communities; reduced disturbance of critical habitats (https://redpromar.org/redpromar); • **ECOMARIS,** • **Management and Monitoring of Oceanic Marine Protected Areas** (**AMPO**): Ecology of the	- http://marineregions.org/mrgid/21885 - http://www.idecanarias.es/resources/PLA_ENP_URB/LZ/AD/L-02_Arhipielago_Chinijo/1006/TIP/prug_pn_achi_mi.pdf - https://588b85c5-60f3-440c-80c6-3b3cbe03d01b.usrfiles.com/ugd/588b85_7e2a3e948c82432db1fffed4031e0bef.pdf - https://588b85c5-60f3-440c-80c6-3b3cbe03d01b.usrfiles.com/ugd/588b85_f3e435d6e8a14e19a152ae5c3e486751.pdf - https://academic.oup.com/bioscience/article/57/7/573/238419 - https://accedacris.ulpgc.es/handle/10553/123323 - https://deepsea.uac.pt/publications - https://diariodarepublica.pt/dr/detalhe/decreto-legislativo-regional/13-2016-74967224 - https://diariodarepublica.pt/dr/detalhe/decreto-legislativo-regional/28-2011-146488 - https://doi.org/10.1016/j.ecolmodel.2015.05.021 - https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en - https://environment.ec.europa.eu/topics/nature-and-biodiversity/natura-2000/permitting-procedure_en - https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2008:074E:0735:0741:EN:PDF - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM:2021:240:FIN - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.257.01.0135.01.ENG%20 - https://expressodasilhas.cv/economia/2024/09/20/nortuna-cabo-verde-avanca-na-producao-de-especies-aquaticas-com-primeiras-vendas-previstas-para-2025/93372 - https://faolex.fao.org/docs/pdf/cvi196285bis.pdf - https://gorreana.pt/en/ - https://intemares.es/ - https://intemares.es/2017/09/21/sebadales-las-praderas-marinas-de-las-islas-canarias/

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

	Madeira-Tore Geological Complex and adjacent Seamount (Ecological characterization of oceanic areas with significant ecological value, identifying key conservation sites and providing scientific support for the planning and management of current and future Marine Protected Areas (AMPO)); • **BIOMETORE** Biodiversity in seamounts: The Madeira-Tore and Great Meteor • **MSP4Bio (www.msp4bio.eu);** • **MSP-OR (www.msp-or.eu);** • **MarSP (www.marsp.eu);** • **Regions4Climate (www.regios4climate.eu);** • **Mystic Seas I, II & III (Monitoring descriptor biodiversity in Macaronesia sub-region);**	- https://jo.azores.gov.pt/api/public/ato/384f21cc-7bef-4fc1-884d-5c38cff9f43c/pdfOriginal - https://joram.madeira.gov.pt/joram/1serie/Ano%20de%202016/ISerie-114-2016-06-30sup.pdf - https://lifegarachico.eu/wp-content/uploads/2024/06/Dossier_LifeGarachico_EN.pdf - https://mapper.obis.org/?geometry=POLYGON%20((-20.0962%2034.7700,%20-19.8501%2031.3963,%20-13.8032%2031.6212,%20-14.1724%2034.7267,%20-20.0962%2034.7700 - https://mapper.obis.org/?geometry=POLYGON%20((-34.1543%2042.4673,%20-34.1191%2034.9880,%20-21.0410%2035.0456,%20-21.0762%2042.1291,%20-21.0762%2042.1291,%20-34.1543%2042.4673 - https://maritime-forum.ec.europa.eu/node/5726_en - https://maritime-forum.ec.europa.eu/node/5730_en - https://msp4bio.eu/wp-content/uploads/2024/11/D4.1-Criteria-for-the-representation-of-the-social-and-economic-dimension-of-MPAs.pdf - https://msp4bio.eu/wp-content/uploads/2024/11/D4.2-Guideline-for-the-strategic-and-spatial-measures-for-the-nature-inclusive-operation-of-blue-economy-sectors-ESE3.pdf - https://msp4bio.eu/wp-content/uploads/2024/11/Deliverable4.3_Trade-offs-method-for-protection-and-restoration-in-MSP-ESE3.pdf - https://msp4bio.eu/wp-content/uploads/2024/12/D3.2_Portfolio-of-improved-ecological-criteria-to-be-applied-in-systemic-biodiversity-protection-and-restoration.pdf - https://obis.org/country/173 - https://parquesnaturais.azores.gov.pt/en/parques/1 - https://parquesnaturais.azores.gov.pt/en/parques/2/areasprotegidas/12 - https://parquesnaturais.azores.gov.pt/en/parques/3/areasprotegidas/60 - https://parquesnaturais.azores.gov.pt/en/parques/3/areasprotegidas/61 - https://parquesnaturais.azores.gov.pt/en/parques/3/areasprotegidas/62 - https://parquesnaturais.azores.gov.pt/en/parques/8/areasprotegidas/104 - https://parquesnaturais.azores.gov.pt/en/parques/9/areasprotegidas/110 - https://pharosproject.eu

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

• **ClimaRest (www.climarest.eu);** • **BioEcoOcean (www.bioecoocean.org);** • **ARDITI - Atlantic Whale Deal (www.arditi.pt);** • **Blue Mission AA (www.bluemissionaa.eu).**	- https://plocan.eu/en/the-w2power-prototype-test-is-successfully-completed-in-the-plocan-test-site - https://portal.azores.gov.pt/en/web/comunicacao/news-detail?id=11999346 - https://portosantobiosfera.madeira.gov.pt/images/PDF/Candidatura_da_Ilha_do_PortoSanto_INGLES_leve.pdf - https://pt.blueazores.org/ - https://queeniesdailysnippets.wordpress.com/2023/04/24/water-tunnels-in-the-canary-islands-a-journey-of-more-than-2000-km/ - https://redpromar.org/redpromar - https://rm.coe.int/16807467bb; - https://seashepherd.org/2024/11/01/azores-declares-europes-largest-marine-protected-area-a-new-era-of-ocean-defense/ - https://servicos-sraa.azores.gov.pt/grastore/DSCN/BIOSFERA/Relatorio_RevisaoPeriodica_RBCorvo_2017_EN.pdf - https://siaram.azores.gov.pt/reservas-biosfera/ilha-SJorge/Fajas-Sao-Jorge-en.pdf - https://storymaps.arcgis.com/stories/4bc68b00ff3d4a6080f3d7ecbbce4a41 - https://sustainable.azores.gov.pt/wp-content/uploads/2021/09/EC08_01PlanoAcao2019-2030_EN_s.pdf - https://www.cbd.int/doc/meetings/mar/mcbem-2014-04/other/mcbem-2014-04-pt-strategy-2013-2020-en.pdf - https://www.cbd.int/doc/submissions/ias/ias-pt-2007-en.pdf - https://www.cbd.int/ebsa/ - https://www.ccrup.eu/wp-content/uploads/2021/07/FisheriesOverview_Azores_2020.pdf - https://www.cienciacanaria.es/secciones/a-fondo/310-salinas-de-canarias#:~:text=Las%20Salinas%20que%20en%20la,%2C%20Santa%20Luc%C3%ADa%2C%20Gran%20Canaria%3B - https://www.coe.int/en/web/bern-convention/-/selvagens-islands-nature-reserve#:~:text=Selvagens%20Islands%20Nature%20Reserve%20is,islets%20and%20respective%20maritime%20area. - https://www.ecologic.eu/sites/default/files/event/2017/gilberto_carriera_-_dram_faial-pico_channel_final_0.pdf

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- https://www.energias-renovables.com/eolica/gran-canaria-acogera-el-primer-parque-eolico-20241108
- https://www.fao.org/faolex/results/details/en/c/LEX-FAOC162556/
- https://www.foi.se/rest-api/report/FOI%20Memo%206820
- https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2015.00104/full#B13
- https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2021.669790/full
- https://www.frontiersin.org/journals/marine-science/articles/10.3389/fmars.2023.1242799/full
- https://www.gobiernodecanarias.org/pesca/temas/reservas_marinas/rrmm_la_graciosa.html
- https://www.gwp.org/contentassets/aa500f6c8cb749d7ac324a4065395386/203.the-canary-islands-experience.pdf
- https://www.iccat.int/en/iccatmanual.html
- https://www.indemares.es/
- https://www.interregeurope.eu/digital-islands
- https://www.ipcc.ch/report/ar6/wg1/
- https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/biodiversidad-marina/LIGERO_ZEC10016_MAR_2014_tcm30-521002.pdf
- https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/biodiversidad-marina/LIGERO_ZEC10017_MAR_2014_tcm30-521005.pdf
- https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/biodiversidad-marina/LIGERO_ZEC10020_MAR2014_tcm30-521008.pdf
- https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/biodiversidad-marina/LIGERO_ZEC10021_MAR_2014_tcm30-521011.pdf
- https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/biodiversidad-marina/LIGERO_ZEC10022_MAR_2014_tcm30-521014.pdf
- https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/biodiversidad-marina/LIGERO_ZEC10035_MAR_2014_tcm30-521017.pdf
- https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/biodiversidad-marina/LIGERO_ZEC10037_MAR_2014_tcm30-521020.pdf

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

		- https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/biodiversidad-marina/LIGERO_ZEC10048_MAR_2014_tcm30-521023.pdf - https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/biodiversidad-marina/LIGERO_ZEC10053_MAR_2014_tcm30-521026.pdf - https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/biodiversidad-marina/LIGERO_ZEC10056_MAR_2014_tcm30-521029.pdf - https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/biodiversidad-marina/LIGERO_ZEC20126_MAR_2014_tcm30-521068.pdf - https://www.miteco.gob.es/content/dam/miteco/es/biodiversidad/temas/biodiversidad-marina/LIGERO_ZEC20128_MAR_2014_tcm30-521071.pdf - https://www.miteco.gob.es/content/dam/miteco/es/costas/temas/proteccion-costa/ESZZ15002_Memoria%20Resumen_tcm30-161144.pdf - https://www.miteco.gob.es/es/biodiversidad/temas/biodiversidad-marina/espacios-marinos-protegidos/red-areas-marinas-protegidas-espana/red-rampe-index.html - https://www.researchgate.net/publication/384790674_Sustainable_Groundwater_Management_in_the_Canary_Islands_Implementing_Managed_Aquifer_Recharge_and_Nature-Based_Solutions - https://www.sciencedirect.com/science/article/abs/pii/S0308597X13000031?via%3Dihub - https://www.sciencedirect.com/science/article/pii/S0048969720303739 - https://www.sciencedirect.com/science/article/pii/S0160412024001818
Cabo Roche	• **LIFE INDEMARES (https://www.indemares.es/en/marine-areas)** • **LIFE IP INTEMARES:** Development of a participatory governance strategy and a guide for participatory processes to be applied to the areas of the project.	- Spanish Institute of Oceanography (IEO-CSIC). (2022). *INFRAROC Project: Infrastructure for the knowledge and monitoring of marine seabeds.* - OPP72 of Conil. Internal documentation related to ecological transition measures and participatory fisheries management. - WWF Spain & MSC Spain. Technical materials and proposals to improve the sustainability of artisanal fisheries. - European Commission. (2020). *EU Biodiversity Strategy for 2030: Bringing nature back into our lives.* - European Parliament and Council. (2008). *Marine Strategy Framework Directive (2008/56/EC).*

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

	• (https://intemares.es/en/) • **Proyecto Mar de Gades**	- SOLDECOCOS & ECONAUTAS. (2023–2024). *Ecological Transition Action Plan for the OPP72 of Conil.* - Spanish Institute of Oceanography (IEO-CSIC). Scientific and technical cooperation in the monitoring of vulnerable species. - Spanish Network of Marine Protected Areas. Approaches to marine stewardship and participatory governance. - The MedFund. (2023). *Funding strategies for co-managed marine areas in the Mediterranean.* - MITECO. (2021). *Manual for the Development of Marine ZEC Management Plans.*
Pitiusas Islands	• LIFE IP INTEMARES (www.intemares.es) • Proyecto CABALGA (https://www.programapleamar.es/proyectos/cabalga-medidas-innovadoras-e-inclusivas-para-la-recuperacion-y-conservacion-de) • LIFE ECOREST (https://www.life-ecorest.eu/)	- https://www.caib.es/sites/rednatura/es/plan-rector-de-uso-y-gestion-del-parque-natural-de-ses-salines-de-ibiza-y-formentera/ - https://www.caib.es/sites/rednatura/es/plan-de-ordenacion-de-los-recursos-naturales-ibiza-y-formentera/ - https://www.caib.es/sites/rednatura/ca/salines_d_eivissa_i_formentera-75878/ - https://www.caib.es/eboibfront/es/2018/10871/605292/decreto-25-2018-de-27-de-ju-establecen-medidas-de-conservacion-de-las-praderas-de-posidonia-oceanica-en-las- - https://www.boe.es/buscar/pdf/2005/BOE-A-2005-14742-consolidado.pdf

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

References

- Agreement GOV/150/2014, of 4 November, declaring special areas of conservation of the Mediterranean biogeographical region, members of the Natura 2000 network, approving their management instrument, and authorising the Minister of Territory and Sustainability to update Annexes 2, 3 and 4 of Agreement GOV/176/2013, declaring the special areas of conservation of the Alpine biogeographical region, members of the Natura 2000 network, and approving its management instrument. Diari Oficial de la Generalitat de Catalunya (DOGC), No. 6744, 6 November 2014.

- Armitage, D. R., Plummer, R., Berkes, F., Arthur, R. I., Charles, A. T., Davidson-Hunt, I. J., Diduck, A. P., Doubleday, N. C., Johnson, D. S., Marschke, M., McConney, P., Pinkerton, E. W., & Wollenberg, E. K. (2009). Adaptive co-management for social–ecological complexity. Frontiers in Ecology and the Environment, 7(2), 95–102. https://doi.org/10.1890/070089

- Blomley, T., & Walters, G. (Eds.). (2019). A landscape for everyone. IUCN. https://doi.org/10.2305/IUCN.CH.2019.08.en

- Brondízio, E. Sonnewend., Settele, Josef., Díaz, Sandra., & Ngo, H. Thu. (2019). The global assessment report of the intergovernmental science-policy platform on biodiversity and ecosystem services. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

- Carayannis, E. G., Barth, T. D., & Campbell, D. F. (2012). The Quintuple Helix innovation model: Global warming as a challenge and driver for innovation. Journal of Innovation and Entrepreneurship, 1(1), 2. https://doi.org/10.1186/2192-5372-1-2

- Decision No. 918 of the Council of Ministers concerning marine environmental matters. Available at: https://www.bsbd.bg/Marine_env/Konsult_obshetvenost/Reshenie918.pdf [Accessed April 30, 2025].

- Degraer, S., U. Braeckman, J. Haelters, K. Hostens, T. Jacques, F. Kerckhof, B. Merckx, M. Rabaut, E. Stienen, G. Van Hoey, V. Van Lancker & M. Vincx (2009). Studie betreffende het opstellen van een lijst met potentiële Habitatrichtlijn gebieden in het Belgische deel van de Noordzee. Eindrapport in opdracht van de Federale Overheidsdienst Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu, Directoraat-generaal Leefmilieu. Brussel, België. 93 pp https://purews.inbo.be/ws/portalfiles/portal/669495/Degraer_etal_StudieBetreffendeOpst ellenLijstPotenti_leHabitatrichtlijngebiedenBelgischeDeelNoordzee.pdf

- di Cintio, A., Niccolini, F., Scipioni, S., & Bulleri, F. (2023). Avoiding “Paper Parks”: A Global Literature Review on Socioeconomic Factors Underpinning the Effectiveness of Marine Protected Areas. In Sustainability (Switzerland) (Vol. 15, Issue 5). MDPI. https://doi.org/10.3390/su15054464

- Douvere, F., & Ehler, C. N. (2020). Moving marine spatial planning forward: A compilation of challenges and their possible solutions. *Frontiers in Marine Science*, 6, 826. https://doi.org/10.3389/fmars.2019.00826

- Dvorski, K., Čeprnja, H., Krstinić, P., Bouvet, M., Watt, L., Ala-Harja, V., Sicard, M., Frau, F., Pala, P., Varjopuro, R., Raatkainen, K., Valanko, S., Glyki, E., Van Gerven, A., Stojanović, I., Mata Lara, M., Lecci, R., & de Franco, F. (2023). Report on the available frameworks and tools for building constituency and expectations management. Deliverable – D1.2 under the WP1 of the Blue4All project (GA n° 101094014).

- Federal Public Service Health, Food Chain Safety and Environment. (2022). *Beheerplannen voor Natura 2000 in het Belgische deel van de Noordzee (2022–2027)*. Available at: https://www.health.belgium.be/en/node/40930 [Accessed 30 April 2025].

- Freitas, R., Romeiras, M., Silva, L., Cordeiro, R., Madeira, P., González, J. A., Wirtz, P., Falcón, J. M., Brito, A., Floeter, S. R., Afonso, P., Porteiro, F., Viera-Rodríguez, M. A., Neto, A. I., Haroun, R., Farminhão, J. N. M., Rebelo, A. C., Baptista, L., Melo, C. S., Martínez, A., Núñez, J., Berning, B., Johnson, M. E., & Ávila, S. P. (2019). Restructuring of the 'Macaronesia' biogeographic unit: A marine multi-taxon biogeographical approach. *Scientific Reports*, 9, Article 15792. https://doi.org/10.1038/s41598-019-51786-6

- González, F.J., Rincon-Tomás, B., Somoza, L., Santofimia, E., Medialdea, T., Madureira, P., Lopez-Pamo, ´ E., Hein, J.R., Marino, E., de Ignacio, C., Reyes, J., Hoppert, M., Reitner, J., 2020. Low-temperature, shallow-water hydrothermal vent mineralization following the recent submarine eruption of Tagoro volcano (El Hierro. Canary Islands. Marine Geol. 430, 106333

- Govern de les Illes Balears. (2018, 27 de juliol). *Decret 25/2018, de 27 de juliol, sobre la conservació de la Posidonia oceanica a les Illes Balears*. *Butlletí Oficial de les Illes Balears (BOIB), 93*, 22521–22538. https://www.caib.es/eboibfront/pdf/ca/2018/93/1022444

- Government of Catalonia. 2014. *Annex 6 – Management Instrument of Agreement GOV/150/2014, of 4 November*. Barcelona: Ministry of Territory and Sustainability. Available at: http://www.gencat.cat/mediamb/xn2000/Acuerdo_150_2014_Anejo6_Instrumento_Gestion.pdf [Accessed April 30, 2025].

- Government of Spain. (2001, December 29). *Law 17/2001, of 19 December, on the environmental protection of Ses Salines of Ibiza and Formentera*. *Official Bulletin of the Balearic Islands (BOIB)*, 156. https://www.caib.es/eboibfront/pdf/ca/2001/156/703040

- Government Ordinance No. 97/2023 of 10 November, approving the Maritime Spatial Plan. Official Gazette of Romania, No. 1027, 10 November 2023. Available at: https://maritime-spatial-planning.ec.europa.eu/media/document/15024 [Accessed April 30, 2025].

- Grorud-Colvert, K., Sullivan-Stack, J., Roberts, C., Constant, V., Horta e Costa, B., Pike, E. P., Kingston, N., Laffoley, D., Sala, E., Claudet, J., Friedlander, A. M., Gill, D. A., Lester, S. E., Day, J. C., Gonçalves, E. J., Ahmadia, G. N., Rand, M., Villagomez, A., Ban, N. C., …

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Lubchenco, J. (2021). The MPA Guide: A framework to achieve global goals for the ocean. Science, 373(6560). https://doi.org/10.1126/science.abf0861

- Herrera, I., Carrillo, M., Cosme de Esteban, M., & Haroun, R. (2021). *Distribution of cetaceans in the Canary Islands (Northeast Atlantic Ocean): Implications for the Natura 2000 Network and future conservation measures*. *Frontiers in Marine Science*, 8, Article 669790. https://doi.org/10.3389/fmars.2021.669790

- Horta E Costa, B., Guimarães, M. H., Rangel, M., Ressurreição, A., Monteiro, P., Oliveira, F., Bentes, L., Sales Henriques, N., Sousa, I., Alexandre, S., Pontes, J., Afonso, C. M. L., Belackova, A., Marçalo, A., Cardoso-Andrade, M., Correia, A. J., Lobo, V., Gonçalves, E. J., Pitta E Cunha, T., & Gonçalves, J. M. S. (2022). Co-design of a marine protected area zoning and the lessons learned from it. Frontiers in Marine Science, 9, 969234. https://doi.org/10.3389/fmars.2022.969234

- Hurlbert, M., & Gupta, J. (2015). The split ladder of participation: A diagnostic, strategic, and evaluation tool to assess when participation is necessary. Environmental Science & Policy, 50, 100–113. https://doi.org/10.1016/j.envsci.2015.01.011

- Hurlbert, M., & Gupta, J. (2024). The split ladder of participation: A literature review and dynamic path forward. Environmental Science & Policy, 157, 103773. https://doi.org/10.1016/j.envsci.2024.103773

- International Maritime Organization (IMO). 2023. *Resolution MEPC.380(80): Designation of the North-Western Mediterranean Sea as a Particularly Sensitive Sea Area*. Adopted 7 July 2023. Available at: https://wwwcdn.imo.org/localresources/en/KnowledgeCentre/IndexofIMOResolutions/MEPCDocuments/MEPC.380(80).pdf [Accessed 2 May 2025].

- IAP2 International Federation. (2018). IAP2 Spectrum of Public Participation. https://cdn.ymaws.com/www.iap2.org/resource/resmgr/pillars/Spectrum_8.5x11_Print.pdf [Accessed 2 June 2025].

- IUCN Marine Mammal Protected Areas Task Force (IUCN-MMPATF). (2023). *Shetland and Fair Isle – Important Marine Mammal Area (IMMA) Fact Sheet*. Available at: https://www.marinemammalhabitat.org/wp-content/uploads/imma-factsheets/NorthEastAtlanticOcean/Shetland-and-Fair-Isle-NorthEastAtlanticOcean.pdf [Accessed 14 May 2025].

- Jouffray, J. B., Blasiak, R., Norström, A. V., Österblom, H., and Nyström, M. (2020). The blue acceleration: the trajectory of human expansion into the Ocean. One Earth 2(1), 43–54. doi:10.1016/j.oneear.2019.12.01

- Katsanevakis, S., Coll, M., Fraschetti, S., Giakoumi, S., Goldsborough, D., Mačić, V., Mackelworth, P., Rilov, G., Stelzenmüller, V., Albano, P. G., Bates, A. E., Bevilacqua, S., Gissi, E., Hermoso, V., Mazaris, A. D., Pita, C., Rossi, V., Teff-Seker, Y., & Yates, K. (2020). Twelve Recommendations for Advancing Marine Conservation in European and Contiguous Seas. Frontiers in Marine Science, 7. https://doi.org/10.3389/fmars.2020.565968

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

- Klügel A, Villinger H, Römer M, Kaul N, Krastel S, Lenz K-F and Wintersteller P (2020) Hydrothermal Activity at a Cretaceous Seamount, Canary Archipelago, Caused by Rejuvenated Volcanism. Front. Mar. Sci. 7:584571. doi:10.3389/fmars.2020.58457

- *Law 2/2010, of 18 February, on Fisheries and Maritime Affairs*. *Official State Gazette* (BOE), No. 61, 13 March 2010. Available at: https://www.boe.es/boe/dias/2010/03/13/pdfs/BOE-A-2010-4179.pdf [Accessed April 30, 2025].

- MacDonald A, Speirs DC, Greenstreet SPR, Boulcott P and Heath MR (2019) Trends in Sandeel Growth and Abundance off the East Coast of Scotland. Front. Mar. Sci. 6:201. doi: 10.3389/fmars.2019.00201

- Maestro, M., Pérez-Cayeiro, M. L., Chica-Ruiz, J. A., & Reyes, H. (2019). Marine protected areas in the 21st century: Current situation and trends. Ocean and Coastal Management, 171, 28–36. https://doi.org/10.1016/j.ocecoaman.2019.01.008

- Mazaris, A. D., Kallimanis, A., Gissi, E., Pipitone, C., Danovaro, R., Claudet, J., et al., (2019). Threats to marine biodiversity in European protected areas. Sci. Tot. Environ. 677, 418–426. doi:10.1016/j.scitotenv.2019.04.333

- Ministry of Environment, Waters and Forests. 2016. *Annex to Order No. 1.432/2016 approving the Management Plan for the Natura 2000 site ROSCI0197 Plaja submersă Eforie Nord – Eforie Sud*. *Official Gazette of Romania*, Part I, No. 916 bis, 15 November 2016. Available at: https://www.mmediu.gov.ro/app/webroot/uploads/files/2016-05-12_PM_Plaje_Eforie_Nord_Eforie_Sud.pdf [Accessed April 30, 2025].

- Ministry of Environment, Waters and Forests. 2016. *Annex to Order No. 1.432/2016 approving the Management Plan for the Natura 2000 site ROSCI0273 Zona marină de la Capul Tuzla*. *Official Gazette of Romania*, Part I, No. 916 bis, 15 November 2016. Available at: https://mmediu.ro/app/webroot/uploads/files/2016-05-12_PM_Zona_marina_Capul_Tuzla.pdf [Accessed April 30, 2025]..

- Norway. 2016. *Regulation of 16 December 2016 on the protection of Raet National Park, municipalities of Tvedestrand, Arendal and Grimstad, Aust-Agder*. FOR-2016-12-16-1632. Available at: https://lovdata.no/dokument/LF/forskrift/2016-12-16-1632 [Accessed May 2, 2025].

- *Order 91.210.098, Official Gazette of the Government of Catalonia* (DOGC), No. 1479, 12 August 1991. Available at: https://agricultura.gencat.cat/web/.content/01-departament/normatives/1991/enllacos-documents/fitxers-binaris/91210098.pdf [Accessed April 30, 2025].

- Oregon State University, IUCN World Commission on Protected Areas (IUCN-WCPA), Marine Conservation Institute, National Geographic Society, & UNEP World Conservation Monitoring Centre. (2019). An Introduction to the MPA Guide. https://wdpa.s3.amazonaws.com/MPA_guide/MPAs_English_4pp.pdf

- Pascual, U., Balvanera, P., & Christie, M. (2023). Editorial overview: Leveraging the multiple values of nature for transformative change to just and sustainable futures —

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759

Insights from the IPBES Values Assessment. Current Opinion in Environmental Sustainability, 64, 101359. https://doi.org/10.1016/j.cosust.2023.101359

- Patino-Martinez, J., Dos Passos, L., Afonso, I. O., Teixidor, A., Tiwari, M., Székely, T., & Moreno, R. (2022). Globally important refuge for the loggerhead sea turtle: Maio Island, Cabo Verde. *Oryx*, 56(1), 54–62. https://doi.org/10.1017/S0030605321001180

- Programme of Measures for Belgian Marine Waters. Natura 2000 and Marine Strategy Framework Directive – Article 13. Federal Public Service for Public Health, Food Chain Safety and Environment, Brussels, Belgium, 76 pp.

- Raet nasjonalparkstyre. (2023). *Forvaltningsplan for Raet nasjonalpark 2023–2028*. Rapport 1/2023. Available at: https://www.nasjonalparkstyre.no/uploads/files_raet/RAET_NP_forvaltningsplan_0906_2023.pdf [Accessed 2 May 2025].

- Regional Legislative Decree No. 15/2012/A implementing Directive 2009/147/EC and Directive 2009/147/EC of the European Parliament on protected wildlife within the Autonomous Region of Azores. Available at: https://faolex.fao.org/docs/pdf/por111020.pdf

- Regulation on the Implementation of Fishing, Catching, and Harvesting of Wild Marine Resources (Høstingsforskriften). FOR-2021-12-23-3910. Oslo: Ministry of Trade, Industry and Fisheries. Available at: https://lovdata.no/dokument/SF/forskrift/2021-12-23-3910 [Accessed 14 May 2025].

- Resolution of the Council of Ministers No. 136/2024 (2024). *Diário da República*, 1.ª série, N.º 202, 17 de outubro de 2024. Retrieved from https://diariodarepublica.pt/dr/detalhe/resolucao-conselho-ministros/136-2024-891107797

- Resolution of the Council of Ministers No. 203-A/2019. (2019). *Diário da República*, 1st Series, No. 250 (1st Supplement), 30 December 2019. Retrieved from https://diariodarepublica.pt/dr/detalhe/resolucao-conselho-ministros/203-a-2019-127659203

- Roberts, C. M., O'Leary, B. C., Mccauley, D. J., Cury, P. M., Duarte, C. M., Lubchenco, J., Pauly, D., Sáenz-Arroyo, A., Sumaila, U. R., Wilson, R. W., Worm, B., & Castilla, J. C. (2017). Marine reserves can mitigate and promote adaptation to climate change. In Proceedings of the National Academy of Sciences of the United States of America (Vol. 114, Issue 24, pp. 6167–6175). https://doi.org/10.1073/pnas.1701262114

- Royal Decree 150/2023 of 28 February, approving the maritime spatial planning plans for the five Spanish marine demarcations. Official State Gazette (BOE), No. 54, 4 March 2023, pp. 32350–32578. Available at: https://www.boe.es/boe/dias/2023/03/04/pdfs/BOE-A-2023-5704.pdf [Accessed 2 May 2025].

- Royal Decree 699/2018, of 29 June, declaring the Mediterranean Cetacean Migration Corridor a Marine Protected Area, approving a preventive protection regime and proposing its inclusion in the List of Specially Protected Areas of Importance for the Mediterranean (ZEPIM List) within the framework of the Barcelona Convention. Boletín

Oficial del Estado, No. 158, 30 June 2018. Available at: https://www.boe.es/eli/es/rd/2018/06/29/699/con.

- Royal Decree of 16 October 2012 amending the Royal Decree of 14 October 2005 establishing special protection zones and special areas for nature conservation in the sea areas under Belgian jurisdiction. *Belgian Official Gazette*, 31 October 2012.

- Shetland Marine Planning Partnership. *Shetland Islands Regional Marine Plan (SIRMP)*. Shetland UHI and Shetland Islands Council. Available at: https://www.shetland.uhi.ac.uk/t4-media/one-web/uhi-shetland-images-and-documents/research/document/marine-spatial-planning/sirmp/SIRMP-2021_FINAL.pdf [Accessed April 30, 2025].

- Spalding, M.D. et al. (2007) 'Marine Ecoregions of the World: A Bioregionalization of Coastal and Shelf Areas', BioScience, 57(7), pp. 573–583. Available at: https://doi.org/10.1641/B570707.

- Van Hoey, G., Guilini, K., Rabaut, M. *et al.* Ecological implications of the presence of the tube-building polychaete *Lanice conchilega* on soft-bottom benthic ecosystems. *Mar Biol* **154**, 1009–1019 (2008). https://doi.org/10.1007/s00227-008-0992-1

- Värmland County Administrative Board. (2019). A Quadruple Helix Guide for Innovations. Interreg North Sea Region project In For Care. https://northsearegion.eu/media/11651/a-quadruple-helix-guide-for-innovations.pdf [Accessed April 30, 2025].

- Whatley L., Schepers L., Kotta J., Szava-Kovats R., Barboza F.R. (2023) Overview of the available biodiversity datasets and platforms relevant for planning (Deliverable –D2.1., under the WP2 of MSP4BIO project (GA n° 101060707)). https://msp4bio.eu/wp-content/uploads/2024/02/MSP4BIO_D2.1-Overview-of-the-available-biodiversity-datasets-and-platforms-relevant-for-planning-1.pdf

This project has received funding from the European Union's HORIZON Innovation Actions under Grant Agreement No 1011656759