Interreg NEXT Black Sea Basin | Co-funded by the European Union | MARMAPS

Open environmental eFolio for joint maritime spatial planning and conservation of the valuable Black Sea Basin marine ecosystems

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Objective

To improve the knowledge of target groups on the importance of conserving the valuable Black Sea ecosystems;

to engage stakeholders in the creation of decision support system for maritime spatial planning to foster spatial conservation and restoration measures for marine biodiversity;

to improve access to open scientific data and tools through environmental electronic eFolio.

Activities

Review of knowledge base and current state of Black Sea conservation planning implementation.

Creation of environmental electronic eFolio, and application of systematic conservation planning.

Guidance on systematic decision tools for prioritisation and integrated planning to improve marine conservation and monitoring.

Stakeholders' capacity building for improving conservation planning.

Regional networking initiative to promote project achievements.

Outputs

MARMAPS partnership

Environmental electronic eFolio

The environmental electronic eFolio provides a solution for cost-effective achievement of conservation targets for marine ecosystems and sustainability of natural sources. It accounts for cumulative impacts from human activities and climatic risks. Main components include decision support system, monitoring protocol templates, citizen science tools and good governance practices for marine protected areas (MPAs).

Regional networking event

Results

Mechanism for exchange and long-term support between members of the target groups and end-users to promote Black Sea biodiversity and nature protection.

Increased capacity of target groups and end-users, based on eFolio, to manage MPAs in terms of planning, monitoring, reporting and good governance.

MARMAPS - Open environmental eFolio for joint maritime spatial planning and conservation of the valuable Black Sea Basin marine ecosystems
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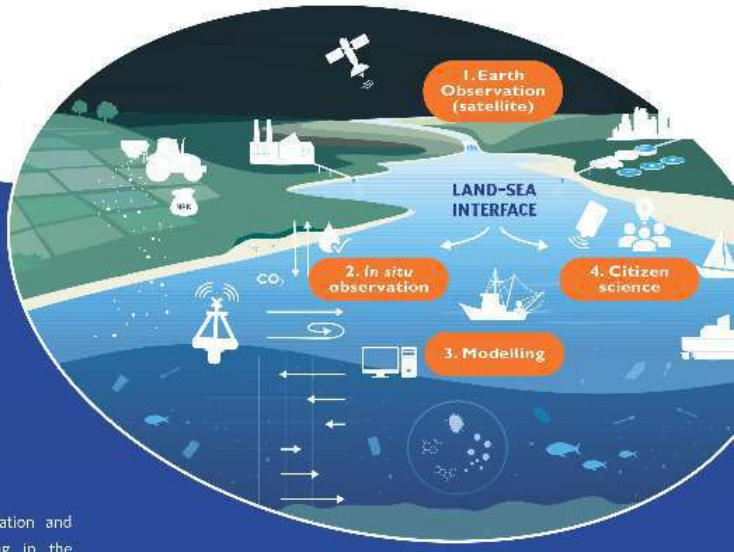
LAND-SEA INTERFACE: LET´S OBSERVE TOGETHER!



LandSeaLot seeks to integrate and enhance existing observation efforts – including *in-situ*, satellite, modelling and citizen science – to better study the land-sea interface

LandSeaLot is a four year, 20-partner consortium, project seeking to connect fragmented research communities and scientific domains to achieve an integrated, cost-effective and robust observation of the land-sea interface to help achieve the goals of the Water and Marine Strategy Framework Directive as well as the EU Mission "Restore our Ocean and Waters by 2030" and the wider objectives of the EU Green Deal. LandSeaLot is bringing together leading scientific expertise and research infrastructures (JERICO-RI, DANUBIUS-RI and ICOS) with key stakeholders, citizen science groups and initiatives (Copernicus, ESA, EEA and GEOSS) to establish better integration and collaboration between communities working in the land-sea interface and to co-design a common observation strategy that will be tested in the pilot LandSeaLot Integration Labs. By leveraging low-cost observation technology, and linking satellite and *in situ* observations and models, with citizen science, LandSeaLot will generate new FAIR data and integrated information products. These will be available through their assimilation into European Initiatives such as EMODnet, Copernicus services and the European Digital Twin of the Ocean.

I. EARTH OBSERVATION (SATELLITE)
Observing change in e.g., coastal erosion, sea level rise, turbidity and chlorophyll and land use patterns

2. *IN SITU* OBSERVATION
Observing change through fixed and mobile platforms e.g., in water quality, coastal erosion and morphological changes, carbon fluxes and nutrients

3. MODELLING
Predicting change in e.g., water temperature, sea level, wave patterns, carbon fluxes, plastic pathways, morphological changes, salt intrusion, water quality, habitats for biodiversity

4. CITIZEN SCIENCE
Gathering data from a wider range of locations and perspectives on e.g., temperature, water level, and plastics

Connecting fragmented observing communities and scientific domains to achieve an integrated, cost-effective and robust observation of the land-sea interface

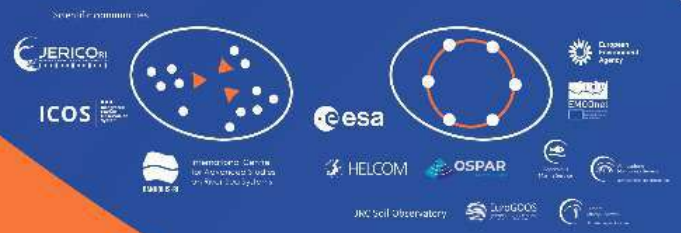
TO IMPLEMENT THE FOUR PILLARS OF THE LANDSEALOT STRATEGY

I. DEFRAGMENTATION
across observing communities and scientific domains

II. CO-DESIGN
of a common observing strategy

III. ALIGNING OR REDUCING
discrepancies between observation approaches and technologies across domains

IV. PILOT & TESTING
proposed actions in the LandSeaLot Integration Labs (LILS) to address nine societal and environmental challenges



LET´S OBSERVE TOGETHER!

Are you a key member of the Earth and/or Ocean observing and data management landscape in Europe?

Are you engaged in land-sea observation (salt and/or freshwater ecosystems) within the vicinity of one of our nine Integration Labs?

Are you associated with a citizen science group interested in using low-cost sensors and technologies to advance the scope of scientific research that will help address societal challenges?

If yes is the answer, we want to hear from you!

Join the LandSeaLot Fora & Community

Visit our website (landsealot.eu) and fill out the stakeholder contact form to receive information on how to get involved.

Sign-up for our newsletter and follow us on LinkedIn (@landsealot) to keep abreast of the latest project news and events.

Deltares · Ifremer · SMHI · NORCE · PML · Co-funded by the European Union · UK Research and Innovation

Developing Optimal and Open Research Support for the Black Sea

Our journey so far...

Stakeholder Engagement

We've spoke to everyone interested in **future of the Black Sea** from professionals to schoolchildren through workshops, training and ocean literacy activities.

DOORS Research Cruises

are expanding the **monitoring capability** of the Black Sea and testing new approaches and techniques for harmonised data acquisition.

Revolutionary Data Platform

We're developing the Black Sea's first **System of Systems** (SoS) platform, delivering in-situ, earth observation and modelling data.

Black Sea Accelerator (BSA)

has delivered a series of high level trainings on business models, pitching and how the SoS can be used to benefit **the Blue Economy** across the region.

Early Stage Research Exchange (ESRE)

Our Knowledge Transfer and Training (KTT) programme has funded **6 exchange placements** through an international programme of collaborative research activities between Black Sea countries and international partners, investing in the scientists of the future.

CONNECT WITH US !

@doorsblacksea

www.doorsblacksea.eu

DOORS BLACK SEA

General Coordinator:

GeoEcoMar

This project has received funding from the European Union's Horizon 2020 Framework Programme for Research and Innovation (H2020-BG-2014-1) under grant agreement No 101000518.

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Project 101124670 - Black Sea SIERRA

Harnessing complementary curricular preparedness via sustainable management in response to civil and military pollution on the coastline, tributaries and lagoons in Black Sea's North, West, South zone

Authors: Eng. DEÁK György PhD. Habil.*; Eng. TUDOR Georgeta; Dr. Eng. MATEI Monica; Dr. Eng. BOBOC Mădălina; Dr. Ecol.HOLBAN Elena; Dr. Eng. CHIULAN Ioana
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Granting authority: European Climate, Infrastructure and Environment Executive Agency (CINEA)
Programme: *European Maritime, Fisheries and Aquaculture Fund (EMFAF)*
Call: *EMFAF-2023-PIA-FLAGSHIP - Regional flagships projects supporting sustainable blue economy in EU sea basins*
Topic: *EMFAF-2023-PIA-FLAGSHIP-2-BLACK - Harnessing preparedness and response to marine pollution in the Black Sea*
Type of action: *EMFAF Project Grants*
Starting date: *October 1st2023*
Duration: *36 months*
Budget: *749 999.38 Euro* **Grant** *599 999.50 Euro*

PROJECT SUMMARY

The ***Black Sea SIERRA*** project will prepare and adapt decision-makers' response capacity to current/emerging marine pollution, by coordinated cross-border response to armed conflict contamination. The consortium, with experience in the Black Sea (RO, BG, UA, TR) and Mediterranean (IT) basins lists two ***priorities***:

- ***Identifying specific types of marine pollution***, including war related contaminants, on an area of cca. 90,000 km2 along the Black Sea shoreline (territorial, international waters), tributary rivers, and lagoons; ***Quantifying added marine pollution from armed conflicts***, by detecting new contaminants and by hotspot diachronic and synchronic assays of undisturbed core sediments (thru project risk maps); ***Detection/assay of novel hazardous substances***: war-generated/emerging contaminants, microplastics, pesticides, to assess the impact/threats on key marine biodiversity; A map of underwater noise pollution will assess its impact on biodiversity (dolphins).
- The research activities will grant the premises to the ***management plan*** and ***training curricula*** and outputs on armed conflict contribution to marine pollution; Providing a ***handbook on marine pollution assessment methodology and sources***, including armed conflicts in the Black Sea region; Development of ***remedial measures*** to be implemented by competent authorities; Conducting ***training workshops*** and ***meetings with decisional stakeholders and policymakers*** to increase response capacity, and to optimize cooperation of Black Sea participant countries.

BLACK SEA SIERRA CONSORTIUM

Assembly of 7 organizations from ***3 EU countries (RO, BG*** and ***IT)*** and from ***2 non – EU countries (UA and TR)***, it consists of ***1 R&D institute (COO - RO)***, ***3 academies (RO, BG, UA)*** and ***3 universities (TR, IT, RO)*** and demonstrates a high-level expertise, providing the required infrastructure to support the project objectives' implementation.

Coordinator RO, Bucharest — ***NATIONAL INSTITUTE FOR RESEARCH AND DEVELOPMENT IN ENVIRONMENTAL PROTECTION (INCDPM)***

High-level R&D institution in the environmental protection field, with more than sixty years of cumulated experience at national and international level, INCDPM carries out interdisciplinary research activities, developing "win-win" preventive solutions, adopted in an environmental-friendly manner and targeted on ensuring the favorable conservation status of ecosystems and their biodiversity.

P1 BG, Varna — ***INSTITUTE OF OCEANOLOGY BAS (IO-BAS)***

IO-BAS conducts fundamental and applied research in the field of oceanography in accordance with the national priorities and global trends. The research, applied science and expert work are aimed at developing a strategy for sustainable development and management of the Black Sea ecosystem.

P2 IT, Palermo — ***E.M. ASSOCIAZIONE A.R.C.E.S. (ARCES)***

ARCES is providing an inter-disciplinary paradigm, most being focused on blue economy and in particular conservation of marine biodiversity: protection and safeguarding of the environment, Blue and circular economy, organization of events for the dissemination of research results of implemented projects and capitalization with the aim of creating clusters.

P3 TR, Ordu — ***ORDU UNIVERSITESI (ORDU)***

ORDU is one of the largest institutions focusing on the marine science within the Black Sea coasts of Turkey, through their research departments, the engineering disciplines provide hydrodynamic calculations, marine science department will analyse the impacts on the ecosystems.

P4 UkrSCES, Odesa — ***The Ukrainian Scientific Center of Ecology of the Sea (UkrSCES)***

UkrSCES – is a unique institution of all state ecological systems of monitoring within the Black and Azov Seas, which provides a whole complex of tasks of the ecological monitoring. It is the main institution of the Ministry of Environmental Protection of Ukraine in the field of marine ecological researches.

P5 RO, Constanta — ***MIRCEA CEL BATRAN NAVAL ACADEMY (MBNAR)***

Through scientific research, development, innovation, and technology transfer, MBNAR generates and disseminates knowledge by carrying out initial and continuous training for university students.

P6 RO, Iasi — ***GHEORGHE ASACHI TECHNICAL UNIVERSITY OF IASI (TUIASI)***

As one of the nation's oldest and most prestigious institutions, preserving a notable tradition in engineering, scientific, and cultural education, TUIASI has a distinguished local, national, and worldwide presence and educates highly skilled professional engineers capable of meeting the innovation, research, and development needs of the society

OBJECTIVES and IMPLEMENTATION

- **O1** Securing project performance by meeting the budget and scheduled timescales objectives throughout management structures and procedures implementation.
- **O2** Identification and quantification of the *marine pollutants of critical importance* in the North, West, and South of the Black Sea, with special emphasis on *emerging pollutants, microplastics, nutrients, algal blooms, noise pollution*, and *armed conflict-related pollution*.
- **O3** Assessment of *contaminant bioaccumulation* in the North, West, and South Black Sea region.
- **O4** Integrative *spatial representation* and *potential risk prioritization* of *marine pollution*, including armed conflict-related contaminants in the North, West, and South of the Black Sea region.
- **O5** Identification of *hotspot locations*, quantification of *specific pollutants* connected to armed conflicts, and *remedial measures*
- **O6** Establishing the *decision-making players* (authorities and organizations), *reaction strategies*, and *management tactics* for marine pollution
- **O7** Development of a *sustainable management plan for marine pollution – training curricula*
- **O8** Preparation of intended *dissemination materials* for *stakeholder decision-making support*, to increase the knowledge and awareness, and grant access of the large public to the project's outcomes

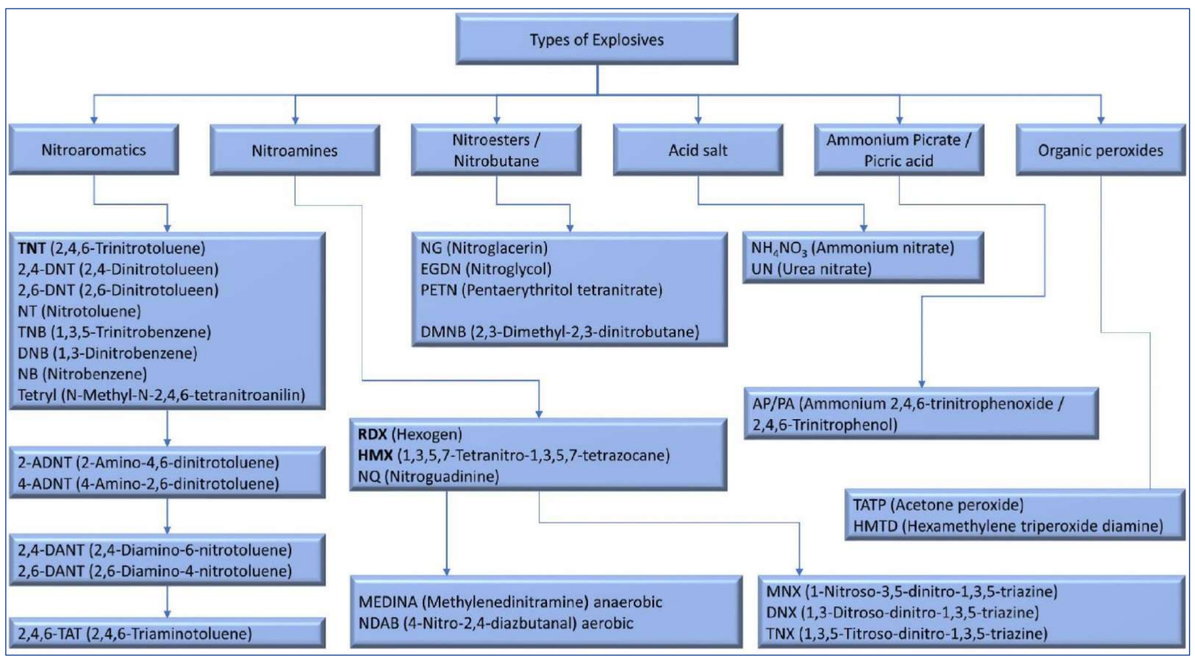
WP1	O1	Lead: COO - INCDPM	Project management and coordination, development, and implementation of consortium management guidelines

Project performance

WP2	WP3	WP4	WP5	WP6
O2	O3, O4	O5	O6, O7	O8
Lead: P3 - ORDU	Lead: COO - INCDPM	Lead: P4 – UkrSCES	Lead: P1 – IO BAS	Lead: P2 - ARCES
Assessment of pollution levels in the Black Sea region (coastal zone, tributary rivers, and lagoons), generated by civil and military activities	Identifying major biodiversity components threatened by pollution (bioaccumulation) in the coastal zone, tributary rivers, and lagoons of the Black Sea	Remedial measures and long-term reaction plans for particular contaminants in the Black Sea region associated with armed conflict	Elaboration of a complementary sustainable management plan in response to civil and military marine pollution in the Black Sea	Dissemination, instruction programs in sustainable and integrated management, prompt reaction to novel contaminant categories, and conservation of marine biodiversity
Quality data sampling		*Marine pollution impact; BAT*	*Develop and optimize regional science-policy dialogue and training*	

EXPECTED OUTCOMES and RESULTS

- ❑ Policy briefs
- ❑ Consortium methodological guide for sampling and laboratory analysis of particular and/or specific pollution types
- ❑ Report on regional marine water pollution types and identification of the relevant indicators for the N, W and S region of the Black Sea
- ❑ Database of regional marine water pollution types and identification of the relevant indicators
- ❑ Report on bioaccumulation levels, including significant indicator trace elements, in extreme contamination levels, in the Black Sea
- ❑ Database bioaccumulation levels, including significant indicator trace elements, in
- ❑ extreme contamination levels, in the Black Sea
- ❑ Spatial and numeric models and simulations datasets concerning the spatial distribution and dispersion circuits of contaminants in the Black Sea
- ❑ Integrated regional pollution report and database including armed conflicts
- ❑ Monitoring guide for armed conflict related environmental pollution
- ❑ Marine pollution remedial solution prototype
- ❑ Relevant authorities / organizations in charge of reaction to marine environment pollution
- ❑ Complementary sustainable management plan of response strategies to civil and military marine pollution
- ❑ Complementary training curricula for optimized response capacity to marine pollution problems, including armed conflicts
- ❑ Training courses and local/national workshops – Romania, Bulgaria, Ukraine and Turkey
- ❑ General workshop and meetings with the decisional stakeholders and policymakers in the Black Sea region including EU representatives



Sample name	Cd (µg/L)	Ni (µg/L)	Pb (µg/L)	Zn (µg/L)
MB1	0.080	2.86	4.7	232
MB2	0.330	3.33	6.4	53.1
MB3	0.140	0.57	27.9	35.2
MB4	0.130	2.50	8.75	7.25
MB5	0.167	2.48	6.29	2.57
MB6	0.146	1.62	3.52	0.76
MB7	0.037	0.38	6.29	4.29
Sed	0.32[a)]	53.35[a)]	37.32[a)]	102.65[a)]

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Co-funded by the European Union

The importance of marine mammals as key indicators for a prosper Black Sea future

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www.marenostrum.ro

Introduction & background

At least 40 % of the world's economy and 80% of the needs of the poor are derived from biological resources. In addition, the richer the diversity of life, the greater the opportunity for medical discoveries, economic development, and adaptive responses to such new challenges as climate change (Convention on Biodiversity). Cetaceans are **ecosystem engineers**. They modify habitats in a way that increases species richness and habitat productivity. As a result, cetaceans are important for **maintaining the health and stability of the environment** they are living in. The cetaceans living in our seas and rivers are important **indicators of the state of the marine environment**.

At the same time, they explore the potential for finding better solutions to marine and societal challenges through widening the range of stakeholders involved, applying RRI principles, applying socio-technical approaches, and using collaborative methods to enhance knowledge sharing and co-creation.

Healthy marine and coastal ecosystems can be assure by being aware of the role of the biota and how each plant or animal can provide useful insights.

Delphinus delphis ssp. *ponticus (Barabash-Nikiforov, 1935)*
Black Sea Common dolphin

VU

Tursiops truncatus ssp. *ponticus (Barabash-Nikiforov, 1940)*
Black Sea Bottlenose dolphin

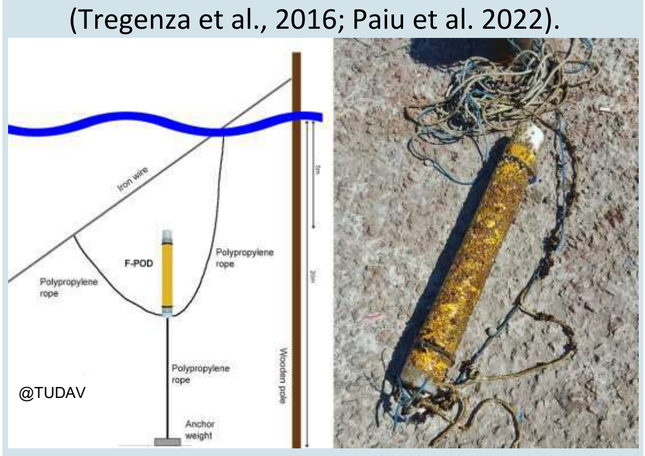
EN

Phocoena phocoena ssp. relicta (Abel, 1905)
Black Sea Harbour porpoise

EN

Methods & techniques

1. **Cetacean Stranding Monitoring as a citizen science tool** - The data collection protocol was based on the ACCOBAMS guidelines (Resolution 7.14) and Mare Nostrum`s Cetacean monitoring guide for volunteers (Cândea et al., 2011). The availability of the of the task force was almost 24/7 for the study period and continues to be.
2. **Abundance estimates** – using distance sampling methods, on vessels or airplanes (Buckland, 2001; ACCOBAMS, 2021).
3. **Presence & Distribution of species** – using click detection techniques (FPODs), loggers – passive acoustic monitoring instruments (Tregenza et al., 2016; Paiu et al. 2022).



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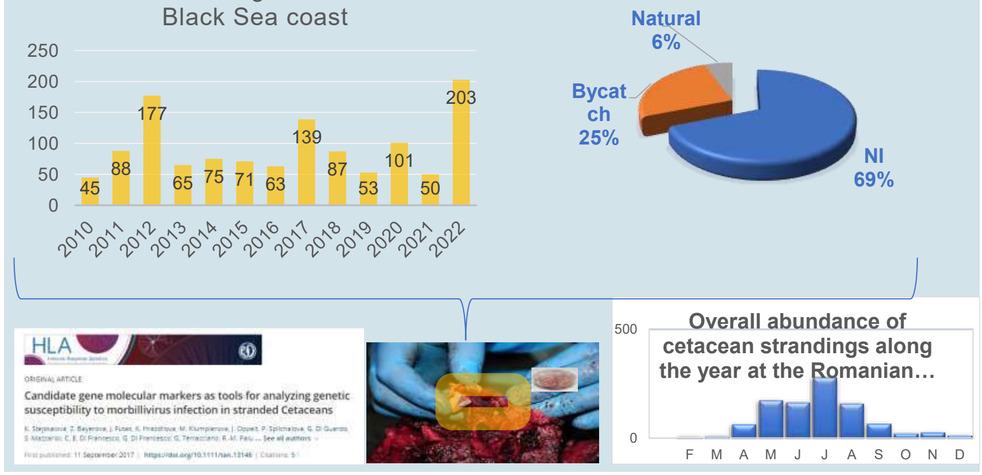

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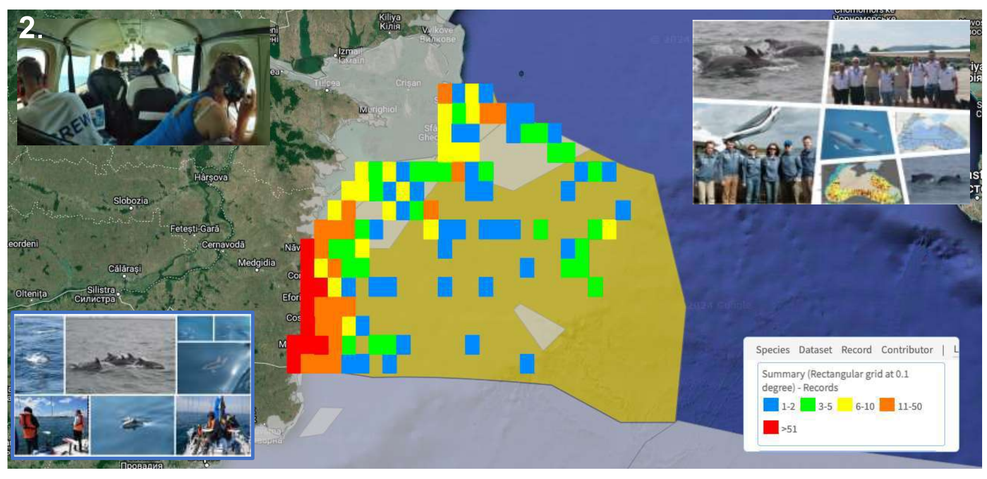

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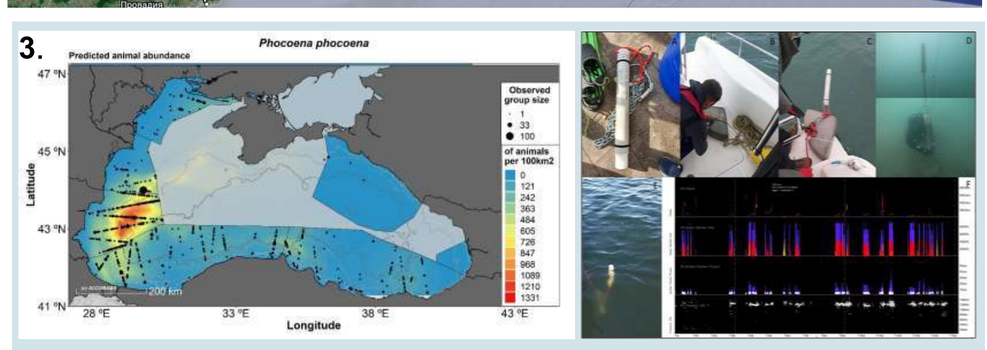

Conclusions

Research results are and can be used in both conservation (e.g. Natura 2000, Red Lists, IUCN, IMMAs) purposes and business (e.g. development and investments plans, strategies, tourism, environmental protection etc.), accessed through different aggregation infrastructures (e.g. **System of Systems develop within the HE DOORS** project or EMODnet).
Mare Nostrum, continuously collects data on Black Sea cetaceans through its monitoring program, in place since 2010, and provides advise and consultancy within the ACCOBAMS, IUCN and Black Sea Commission bodies, and businesses.

To develop a coherent monitoring system for the cetaceans in the Black Seas, based on objective, robust and comparable data, with a view to improving the conservation status of these species and their habitats through appropriate management common efforts and funding is mandatory. **All stakeholders should pledge** for further update and look to improve their research and development actions and adopt a free and public approach in data availability, as long as resources allows it.

Threats to the three cetacean species (Murariu, 2005) living in the Black Sea (see above) also affect the entire ecosystem, and since cetaceans are especially sensitive to them, they act as important indicators of the health of our oceans. It is therefore vital that we study cetacean populations and focus on the **protection of cetacean species and habitats**.

From 2010 **a continuous cetacean dedicated monitoring program** was established **targeting** mainly the **marine mammal strandings and sightings** with **the objective** of **assessing the abundances, densities and trends** along the Romanian Black Sea waters. This was complemented with actions addressing diseases and human induced mortality research (eg. bycath), localized visual observation (eg. photo-identification and vantage point) and acoustic monitoring (eg. F-PODs). A **major achievement** was reached in summer of **2019**, when through **CeNoBS project** (lead by the organization) the first comprehensive density and abundance estimates of cetaceans in the Black Sea through **aerial surveys** was performed within the framework of **ACCOBAMS SURVEY INITIATIVE** (ASI), covering 62% of the entire Black Sea surface (Paiu et al., 2024).

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Papers available @MareNostrum/Marian PAIU

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Supported by the European Commission
Common Maritime Agenda for the Black Sea

RESPONSE: Building Response Frameworks under existing and new Marine Pollution Challenges in the Black Sea (EMFAF Project)

Co-funded by the European Union

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Main Goal

To develop, test and deliver fit-for-purpose, multidimensional training tools and curriculum on marine pollution preparedness and response, together with best practice guidance to enhance the design and effectiveness of actions targeting the identification, observation, mapping and mitigation of marine pollution at the coastal and marine ecosystems of the BS region.

Evolution of the project

1 Preparatory Phase

- Map current landscape of key authorities and organizations
- Report monitoring & mitigation approaches
- Determine between pollution and ecosystem components, function and services links
- Identify types of marine pollution
- Map of current training plans and curricula
- Assess training capabilities of BS authorities

2 Co-creation & development

- Co-creating advanced training curricula with key stakeholders
- Provide a practical replication guide
- Develop a methodological guide for setting-up, running and updating training schemes

3 Stakeholder Empowerment

- Digital Toolkit for setting-up, running and updating curricula
- Regional Action Plan for driving sustainable institutional participation
- Communication Dissemination and Stakeholder Empowerment Plan

4 Operating & monitoring the training process

- National workshops
- Test and refine the training curricula
- Actual training to selected stakeholders on how to reach operational readiness and run training courses
- Set monitoring and risk evaluation indicators

Outcomes will create a common background for all BS coastal countries:

1. To better understand marine pollution processes and the drivers of change.
2. To support institutional development for sustainable and long-term training activities.
3. To improve science base for the description, monitoring and mitigation of pollution.

The RESPONSE project is funded by the European Union under Grand Agreement no. 101124661. Views and opinions expressed are however those of the beneficiaries only and do not necessarily reflect those of the European Union or European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

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DIGITAL TWIN OCEAN DEMONSTRATOR

for a healthier Black Sea

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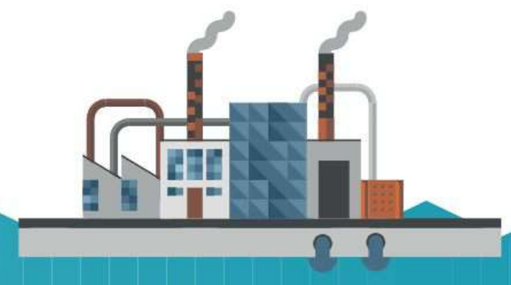


overfishing

eutrophication

climate change

acidification

CO_2

noise pollution

sea snot

chemical pollution

industry

tourism

agriculture

urbanization

maritime transport

sea and land-based activities

invasive species

600 m deoxygenation

O_2

1990 excessive increase in 2024

human-induced pressures

physical, chemical and biological changes in the marine ecosystem

marine litter

3D INTEGRATED MODELLING SYSTEM

recently applied also in the field of **oceanography**

dynamic structure
simultaneously driven by physical and ecological changes

extensive research
facilitates extensive digital research by conducting studies unfeasible on physical objects

predictive capacity
learns through historical and current data to make strong predictions

real-time
changes the analysis and results in parallel with real-time data

How do digital twins work as ocean demonstrators?

They utilize real-time data from databases and smart observation systems, employing dynamic, high-resolution, fully coupled models of sea and watershed with AI tools. These Digital Twins enhance comprehension of regional sea ecosystems, predict their states amid climate changes, and assess socio-economic scenarios for decision-making.

- **Real-Time Information** — Data Pools
- **Documentation and Knowledge Generation** — AI Tools and Machine Learning Models
- **Simulation and Visualization** — Integrated Scientific and Socioeconomic Scenarios on Prediction Systems
- **Continuous Improvement** — High-resolution, Dynamic and Three-dimensional Digital Representation of the Ocean

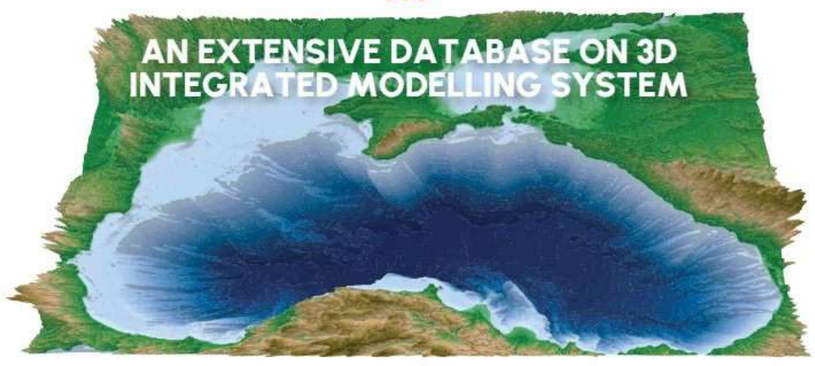
What is the BRIDGE Black Sea Digital Twin Ocean Demonstrator and how does it work?

a digital model of the real-world conditions, processes and dynamics

one of the first examples of digital twin ocean demonstrators

1960 — 2030

blue economy sector analyses → smart observations → Past Data / Current Data / Future Data → living lab experiences → stakeholder input



- ensure safe operating space
- better management recommendations
- enhance capacity building
- test various scenarios
- prediction and early warning sytems
- optimize the data

Contributing to the Black Sea SRIA and its Implementation Plan to enhance the Black Sea ecosystem resilience and surrounding societies, boost biodiversity and safeguard benthic and pelagic fauna

SCAN THE QR CODE FOR MORE

This project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No 101000240.

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EXcellence and competitiveness in marine algae AQUAculture for a sustainable Black Sea

EX-AQUA is aimed at boosting the National Institute for Marine Research and Development (NIMRD) of Romania in building scientific excellence in marine algae aquaculture

KEY PILLARS

Creating excellence science in marine algae aquaculture

Capacity building for NIMRD

Strengthening the local innovation ecosystem

Creating synergies through a new Cluster for Marine Applied Aquaculture

The implementation of these pillars will bridge the technological and knowledge gap between Western and Eastern Europe, creating new jobs in the Blue Economy and boosting national growth

EXPECTED RESULTS

- Innovative marine technologies ready for future research and market upscaling
- Raised TRL for the cultivation of *Ulva* spp. and *Gongolaria barbata*
- New cooperation agreements and synergies for technology adoption
- Participation at EU conferences and co-creation events
- New peer-reviewed publications on marine aquaculture
- Creation of exchange programs for researchers
- Strong EU presence for NIMRD and qualified staff in marine aquaculture
- New Cluster for Applied Marine Aquaculture supporting EX-AQUA

Funded by the European Union

EXcellence and competitiveness in marine algae AQUAculture for a sustainable Black Sea Grant Agreement No 101159509.

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.

Interreg Co-funded by the European Union

NEXT Black Sea Basin

BlackNETs - Exorcising the BLACK Sea's Silent Killers

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BlackNETs

Introduction

Over the past decade, there has been growing international recognition of the need for coordinated and multilateral efforts to address the complex and far-reaching problems caused by abandoned, lost and discarded fishing gear (ALDFG). This gear, also known as derelict fishing gear, is increasingly seen as a major threat to the marine environment. Considered the most dangerous form of marine litter, derelict fishing gear has been identified as having devastating impacts on marine habitats and wildlife. These include seriously damaging marine ecosystems and endangering numerous species, many of which are already threatened with extinction. Harmful impacts include the entanglement and death of seabirds, marine mammals and other organisms, exacerbating the problems of conservation and protection of marine biodiversity.Thus, the need for concerted and effective interventions to manage and reduce the adverse impacts of ALDFG on the marine environment has become evident, emphasizing the importance of international collaboration and coordinated efforts to find sustainable solutions to this urgent problem.

Project scope

The project BlackNETs - Exorcising the BLACK Sea'S Silent Killers, funded by Interreg Next Black Sea Basin, is an 18-month project with a budget of € 456.660,26. The main aim of the project is to improve the joint coastal management system and create governance plans to preserve biodiversity and coastal ecosystems in the Program Area. This region faces similar problems of pollution and "ghost fishing", and the BlackNETs project aims to identify and eliminate polluting factors, reduce derelict fishing gear and protect marine and coastal habitats, thus contributing to a cleaner environment and healthy ecosystems in the Black Sea.

Objectives

The overall objective is to quantify and minimize the impact of abandoned, lost or discarded fishing gear (ALDFG) on the Black Sea environment. This objective includes collecting information on the type, number and reasons why fishing gear is abandoned at sea, investigating environmentally sustainable alternatives, raising awareness among stakeholders on how to minimize losses and promoting the recovery and recycling of lost or damaged fishing gear, all of which contribute to rid the Black Sea of ghost. The BlackNETs project aims to quantify and reduce the impact of ALDFG on the Black Sea marine environment. The main achievement of the project is to eliminate at least 8000 kg of ALDFG from Black Sea waters through pilot actions in each partner country (Romania, Bulgaria, Turkey and Georgia).

Parteners

1. Mare Nostrum NGO, Romania (coordinator)
2. Karadeniz Technical University, Türkiye
3. Institute of Oceanology - Bulgarian Academy of Sciences, Bulgaria
4. LEPL Ilia State University, Georgia

Activities

1. Examination of the reasons for the loss of fishing tools.
2. Mapping of derelict fishing gear accumulation areas.
3. Development of a guidebook to prevent, reduce and remove abandoned fishing gears in the Black Sea.
4. Retrieval of derelict fishing gear from accumulation areas.
5. Capacity building for combating ALDFG and ghost fishing.
6. BlackNETs #GhostBuster campaign.
7. BlackNets public event.

MareNostrum

KARADENİZ TEKNİK ÜNİVERSİTESİ
KARADENİZ TECHNICAL UNIVERSITY
1955

Presented at Black Sea Common Maritime Agenda Stakeholder Conference 2024
September 11-12, Chișinău.

More information available @MareNostrum/Angelica PAIU

Disclaimer:

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EARTHgames4EyoUth

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AIM

The EARTHgames4EyoUth project is focused on the development of Earth competences among young Europeans, and it tackles knowledge, skills, and attitudes toward reducing global and climate change impacts and provides a pathway for a smooth transition from policies to the grassroots level, making them more consumable for youngsters.

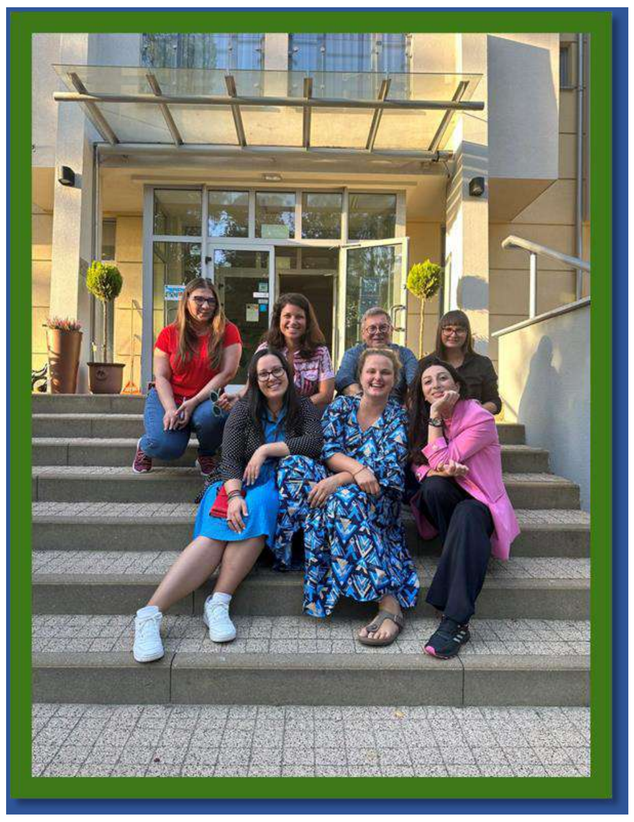
The EARTHgames4EyoUth project fulfills all modern educational needs in an unique way, by offering an educational package that "translates" official policies and regulations into a creative, impactful and practical approach.

CONSORTIUM

The project is built on individual experience of 4 institutions which are heavily involved in educational and environmental activities both in our countries and internationally, through cooperation with various types of international institutions.

Partners:

- Mare Nostrum NGO, Romania
- Slovak Eco Quality, Slovakia
- Today We Have, Poland
- UniGrowth Development Center Youth NGO, Armenia



OBJECTIVES

1.Create innovative educational tools for tackling environmental issues.
2.To bring policies & strategic documents of sustainable green development into grass root level with a more accessible & interactive learner based approach.
3.Equip youth workers/ educators with innovative tools for tackling environmental issues.
4.Develop educators' and youth workers' competencies in working with environmental topics.
5.To create a sustainable partnership among involved parties that within the next 2 years will develop at least 1 joint long term project under sustainable green development.

EARTHgames4EyoUth project is supported by the Erasmus+ program of the European Union.
The duration of the project is 24 months, 01/08/2023 - 01/08/2025

Framework of Earth Competences

Develop a framework model of a new set of competences, namely the Framework of Earth Competences enlightening and explaining the competences of today and future related to sustainability and sustainable development, eco-conscious behavior, close to zero waste behavior, and the 5 R's approach - refuse, reduce, reuse, repurpose, and recycle.

round table with young people & experts

Framework of Earth Competences will be a common reference framework that will identify about 15 competences in 3 key areas (wellbeing people, flourishing planet, and sustainable benefits /instead of profits/) that will describe what it means to be "earth competent".

Play your way into Earth awareness

Creation of a series of interactive games which will serve as educational tools for youth workers and educators, in the field of climate change and environmental protection.

workshops for game testing

4 educational GAMES:

- board game will tackle plastic pollution issues (with emphasis on single-use plastic);
- coloring book presenting different industry and its impact on the climate, environment and people's lifes;
- illustrative cards, on the topic of nature and human wellbeing;
- playing cards game for making ocean literacy accessible even when living far away from the sea/ ocean.

"Educating World changers" program

Development of educational program module within the framework of NFE and its methodology. Empowering youth to develop competencies in identifying and addressing environmental challenges, fostering eco-conscious habits and attitudes, and actively engaging in efforts to improve and sustain environmental quality.

focus groups with youth workers & educators, and young people; international training

environmental education program, workbook for trainees, guide for educators who will implement the program.

Funded by the European Union

Advancing Responsible Marine Research and Innovation Interpreted for Stakeholders

REINFORSEA aims to align marine research with societal needs, enhance research quality and ethical standards, make findings accessible to stakeholders, and boost community engagement in the Black Sea region.

OBJECTIVES

- **Develop Open Responsible Research and Innovation (ORRI) practices tailored to the specific needs and challenges of the Black Sea marine research.**
- **Engage blue economy in the Black Sea quadruple helix actors (academia, industry, government, and society) to adhere to ORRI principles.**
- **Rise capacity-building among the Black Sea marine researchers on ORRI practices.**

EXPECTED RESULTS

- **WEBINAR FOR THE SCIENTIFIC COMMUNITY**
- **CO-CREATION WORKSHOPS FOR EACH STAKEHOLDER GROUP: INDUSTRY, GOVERNMENT, AND SOCIETY**
- **ORRI INFOGRAPHICS & GUIDELINES ADAPTED TO MARINE RESEARCH**

ORRI 1: PUBLIC ENGAGEMENT

ORRI 2: GENDER EQUALITY

ORRI 3: OPEN ACCESS

ORRI 4: SCIENTIFIC LITERACY

ORRI 5: ETHICAL RESEARCH

ORRI 6: GOVERNANCE

SCAN THE QR CODE AND JOIN US IN THE JOURNEY OF EMBRACING OPENNESS, RESPONSIBILITY, AND INCLUSIVITY IN THE BLACK SEA REGION

REINFORCING
Responsible tErritories and Institutions eNable and Foster Open Research and inClusive Innovation for traNsitions and Governance

INCDM

LOMARTOV
[Applied Innovation Engineering]

Funded by the European Union

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Black Sea Common Maritime Agenda Stakeholder Conference

11-12 September 2024
Chișinău, Moldova

Healthy Marine and Coastal Ecosystems

STUDY FOR THE PRELIMINARY IDENTIFICATION OF POTENTIAL NATIONAL MARINE FISHERIES RESTRICTED AREAS IN ROMANIA (ROnFRAs)

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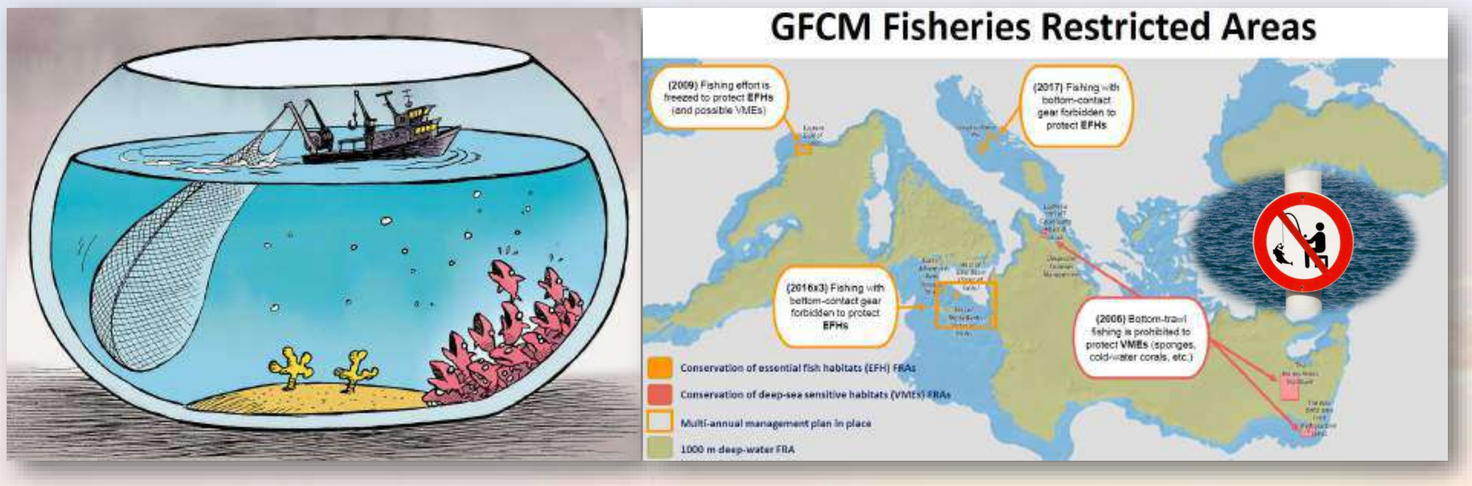
Context

The analysis of the latest GFCM statistics revealed that 97% of fish stocks (including in the Black Sea) are overexploited, so taking action to counter this phenomenon is essential. In addition to applying the general provisions of the Common Fisheries Policy, the establishment of spatial restrictions can contribute to the protection of Essential Fish Habitats (EFH), thus reducing the pressure on stocks.



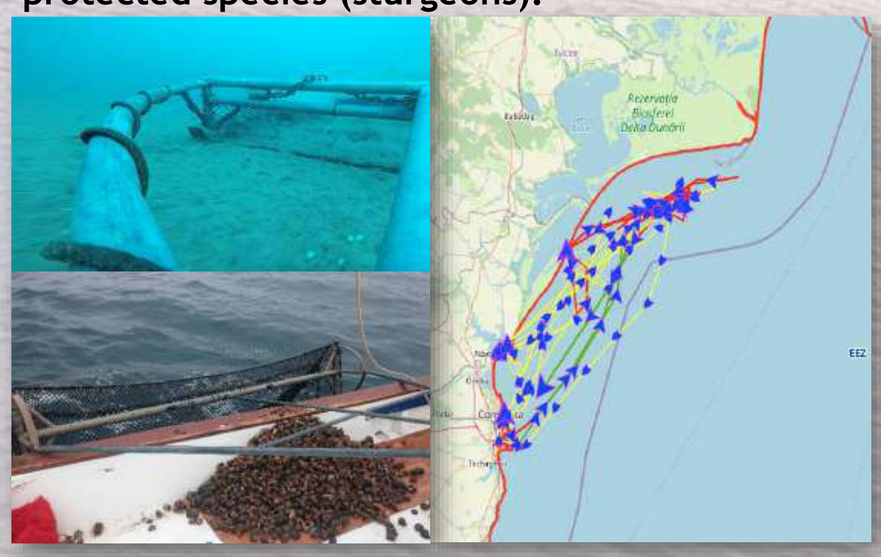
In the Mediterranean Sea and the Black Sea, 1,760,000 km^2 are under the protection regime as Fisheries Restricted Areas (FRAs) established under the aegis of the GFCM (gfcmFRAs), most of this surface being covered by the deep-sea zone (in waters deeper than 1,000 m from the Mediterranean and the Black Sea, any trawling and dredging activity is prohibited, in order to protect demersal habitats). Whereas the Black Sea is anoxic and lifeless below 200 m, this restriction is not effective - all fishing activities are concentrated in shallow areas, where all conservative value species and habitats are present.

Potential VME at the Romanian Coast

***Mytilus galloprovincialis* beds on circalittoral soft substrate are located mostly in the northern part of the Romanian coast** (Natura 2000 habitat subtype 1170-2: *Mytilus galloprovincialis* biogenic reefs/ EUNIS A5.62 Mussel beds on Pontic circalittoral terrigenous muds), in the Danube Delta Biosphere Reserve Marine Zone, which is also a **traditional fishing area for local fishermen**.

This habitat is found offshore, typically between depths of 25 and 70 m. Mussel beds have a particularly important ecological role on soft bottoms, as they provide a hard surface in otherwise muddy areas. This attracts and supports a greater range of marine life than would otherwise be found there including seaweeds, anemones, barnacles, molluscs, crustaceans, echinoderms and polychaetes. Also, this rich biodiversity forms an important feeding habitat for all sturgeon species.

The high-biodiversity mussel beds harbour various threatened species and have socio-economic importance as a habitat (breeding grounds, nurseries) and fishing area for commercially valuable species (*Scophthalmus maeoticus)*, as well as protected species (sturgeons).

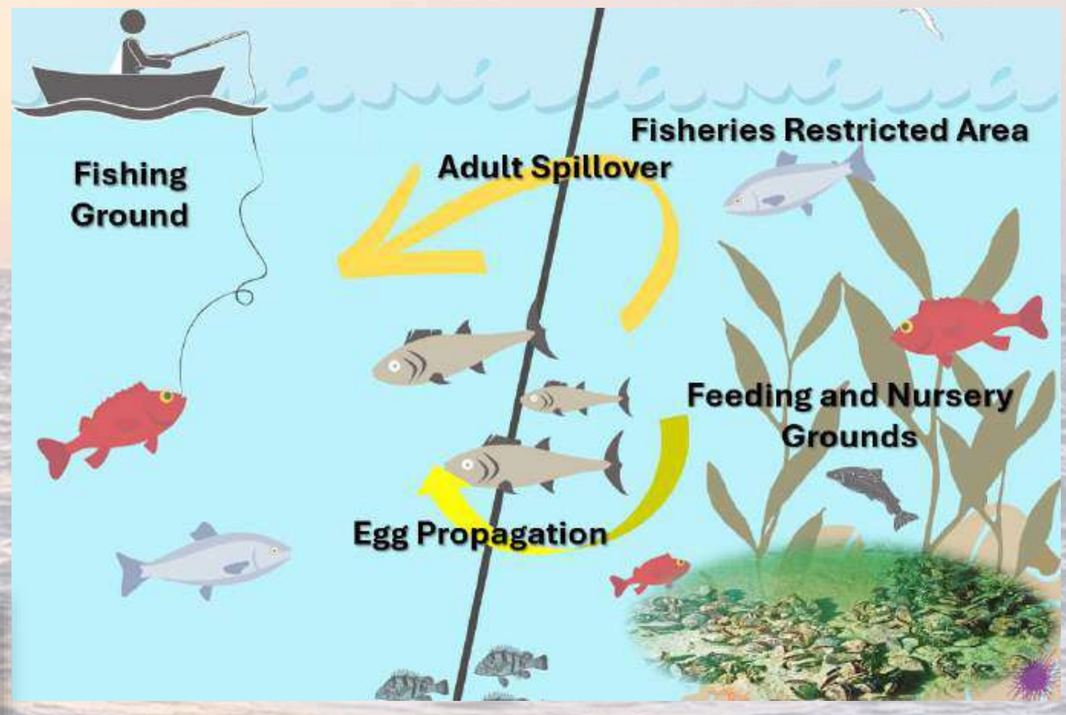


Mussel clumps are highly sensitive to beam-trawling (for *Rapana venosa*) which causes habitat destruction. In Romania, beam trawling was legalized in 2013 and much of this activity overlaps with this vulnerable and unique ecosystem. Area-based fisheries management measures are essential for protecting this habitat.

What are Fisheries Restricted Areas (FRAs)?

A **"Fisheries Restricted Area" (FRA)** is a geographically defined area where certain fishing activities are temporarily or permanently prohibited or restricted in order to improve exploitation patterns and the conservation of specific stocks and essential habitats for ichthyofauna and deep-sea ecosystems. Such an area where fisheries activities are restricted can also be declared at national level (**nFRA**), at the proposal of the National Agency for Fisheries and Aquaculture (NAFA).

Considering the specificity of the Romanian coast, fishing activities are carried out especially near the shore, up to depths of no more than 90 m, so there may be certain overlaps with **Essential Fish Habitats (EFH)** and **Vulnerable Marine Ecosystems (VMEs),** which may be significantly affected. These habitats are defined as essential for the ecological and biological requirements of critical life cycle stages of commercially exploited fish species and require special protection to improve stock status and long-term exploitation sustainability.



Scientifically-substantiated FRAs enable adult fish spillover and egg/larvae propagation to adjacent fishing grounds, thus contributing to healthier fish stocks and, subsequently, sustainable fisheries.

Project Targets

The general objective: Realization and implementation of a preliminary identification study of potential national marine fishing restricted areas (nFRAs)m in the northern part of the Romanian coast.

Specific objectives:

- Adapting and applying a well-documented work methodology, involving **accurate mapping** and **GIS-referencing**, **seabed sampling** and **assessing the evolution of the benthic** biocoenosis, as well as **stomach content analysis**.
- Identifying the optimal polygons for FRA establishment where the mussel clump habitat is representative as feeding and nursery ground for fish important species.
- Proposing spatial fisheries management measures: **defined small areas where fishing is totally restricted,** to allow for the **recovery of the mussel clump habitats** and foster subsequent **spillover** and **propagation effects** in surrounding areas.

ROnFRAs ("Study for the Preliminary Identification of Potential National Marine Fisheries Restricted Areas in Romania") is funded by the National Agency for Fisheries and Aquaculture (Romania)