MARINE PROTECTED AREAS EUROPE

BLACK SEA STAKEHOLDER WORKSHOP

20th June 2024

In collaboration with **MSP-GREEN** and **MSP4BIO**

Co-funded by the European Union

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INTRODUCTION

On 20th June 2024 the MPA Europe project joined forces with the MSP-GREEN and MSP4BIO projects for a key collaborative stakeholder event at the Rosslyn Dimyat Hotel, Varna Bulgaria, to discuss bridging maritime spatial planning (MSP) with the European Green Deal (EGD) and better integrating marine protected areas (MPAs).

The MSP-GREEN project team presented their recommendations for how MSP enables the EGD and the Blue Economy. The MPA Europe project then presented our data-driven approach to identifying networks of MPAs within science-based MSP. Then the MSP4BIO project presented their integrated and modular Ecological-Socio-Economic (ESE) management framework for the protection and restoration of marine ecosystems and their results to date for the Western Black Sea test site cross-border area, from Cape Tuzla in Romania to Cape Kaliakra in Bulgaria. All participants were invited to bring their reflections and contributions on each of these inter-related results and recommendations.

Five members of the MPA Europe team facilitated our workshop to present MPA Europe project's aims, approaches and results to date and to discuss with the region's stakeholders how our work can support national, transboundary and regional designation of marine protected areas and science-based marine spatial planning in a changing climate.

This short report sets out the key discussion points from our workshop and has been shared with all Black Sea stakeholders who joined the workshop and other regional project stakeholders who were not present for the discussions.

CONTEXT

The Black Sea is unique in the world in its low overall oxygen content - around 90% of the Black Sea is anoxic. This is due to limited mixing arising from the shape of the sea-basin and its specific water balance, comprising high surface freshwater inputs from the Danube and other major rivers coupled with high salinity deep water input from the Mediterranean, through the Turkish straits transitional zone. These unique conditions drive lower diversity of marine species than for the Mediterranean Sea, although productivity and biomass for the Black Sea have been reported as higher than in the Mediterranean (Zaitsev Y.P. et al., 2008).

The special nature of this inland sea with its thin, low salinity, oxygenated surface layer and deep anoxic waters to 2,200 m depth is reflected in our new marine ecosystem classification results for Europe, discussed below.

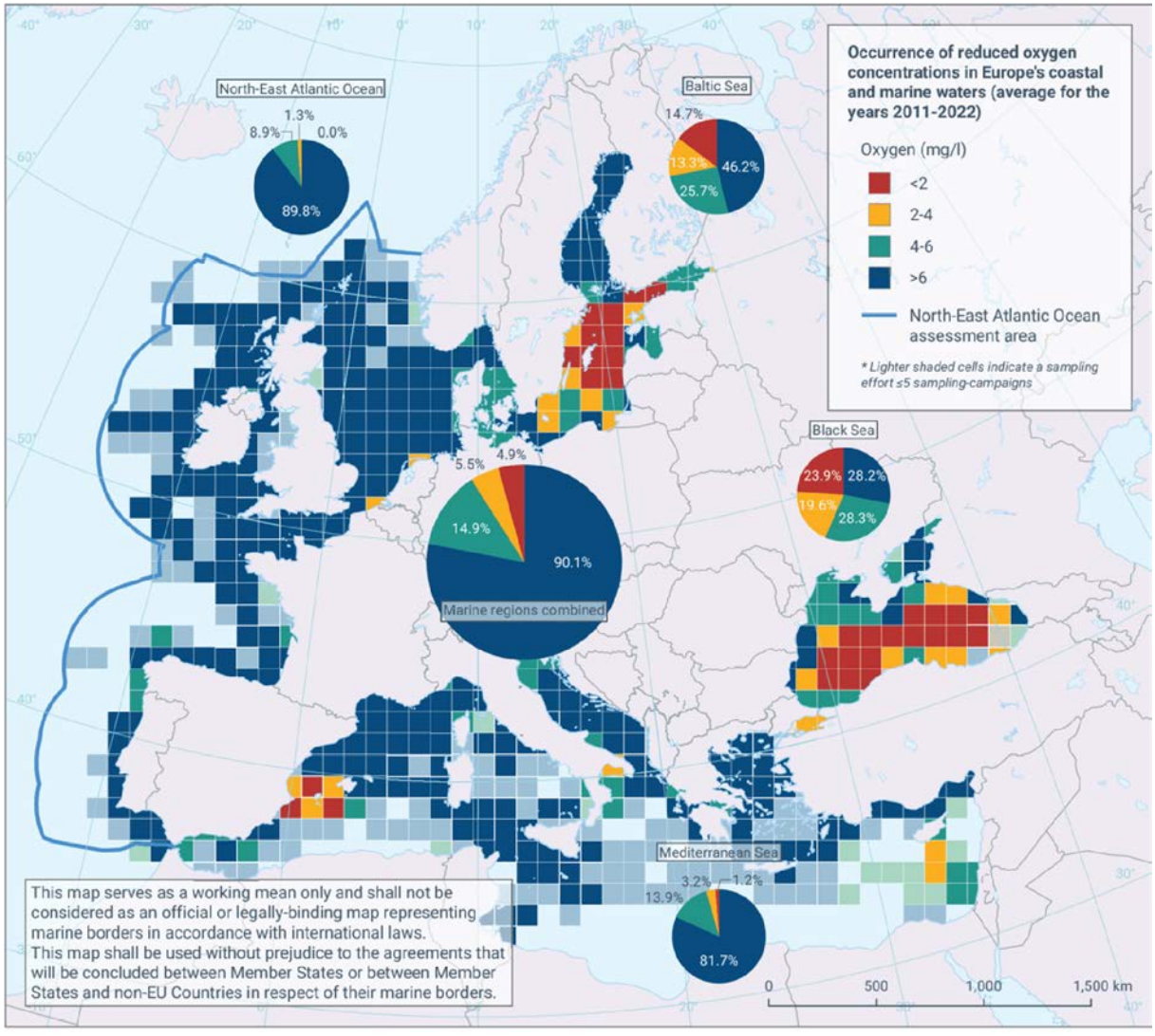

Figure 1. *Occurrence of reduced oxygen concentrations in Europe's coastal and marine waters (average for the years 2011-2022). Source: European Environment Agency.*

According to the Black Sea Commission Permanent Secretariat, MPAs encompass 68,263 km^2 of the Black Sea, around 15% overall. The current network of MPAs are almost all Natura 2000 designations and cover approximately 14.3% of the total EU marine area of the Black Sea (NatureBureau, CEEweb, 2024), as depicted in Figure 2. This network will increase substantially in the coming years to cover at least 30% of the marine area, especially in Bulgaria which currently has around 8% under protection. At least one third of the network, or 10% of the marine area, should be strictly protected, to reach the spatial protection targets agreed upon by the EU Biodiversity Strategy 2030 and the Global targets for 2030 of the UN Convention on Biological Diversity (CBD) set under the Kunming-Montreal Global Biodiversity Framework.

The Common Maritime Agenda for the Black Sea agreed by Bulgaria, Georgia, Moldova, Romania, the Russian Federation, Turkey and Ukraine acknowledges that most of the existing protected areas are in the coastal zones, with fewer marine protected areas offshore. It recommends science-based policy making processes and joint projects between marine, coastal and wetland protected areas, to connect the sea, deltas, lagoons and rivers in the Black Sea region (Ministerial Declaration, 2019). A new four-year UNESCO/UNDP/GEF project to enhance marine and coastal protected area national and regional management, and adoption of blue economy approaches is due to start in the coming months in Georgia, Turkey and Ukraine. Activities will include habitat mapping and classification and revision and adoption of national and regional guidelines on MPAs.

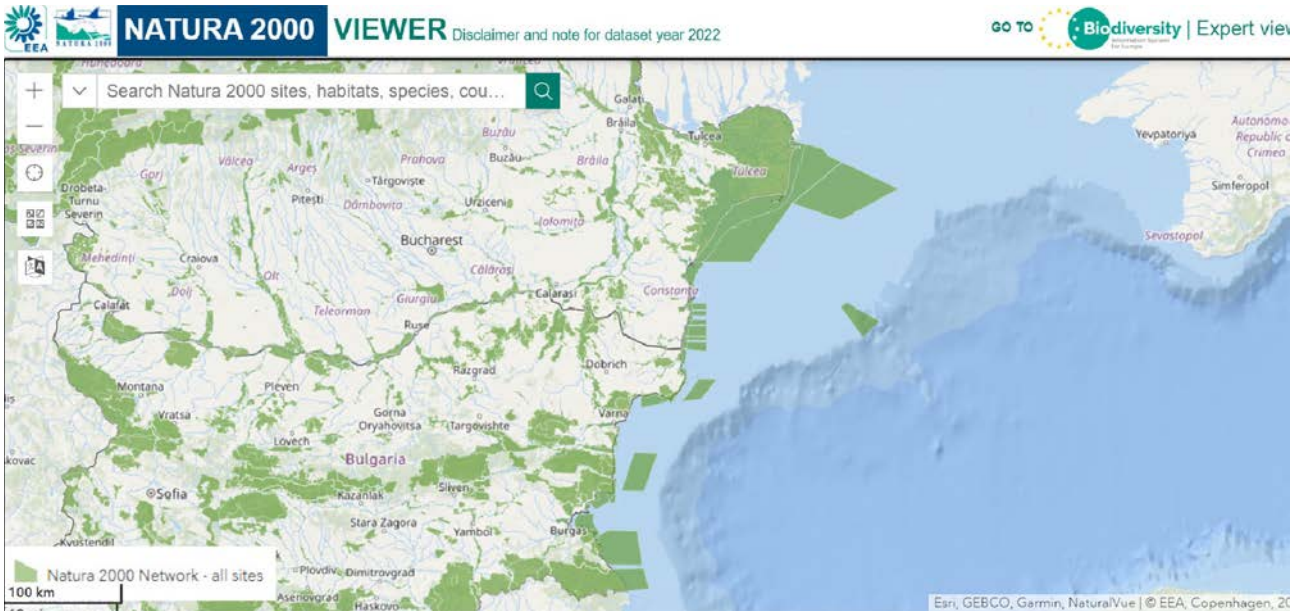

Figure 2. *Screenshot from Natura 2000 Viewer, 24th June 2024. Source: European Environment Agency.*

Networks of MPAs are important to provide connectivity across space for marine species, in addition to natural stepping stones such as seamounts and small islands. Coherent networks of MPAs should not only support connectivity for species dispersal, but also represent the full range of marine biodiversity; cover adequately large areas for species to thrive; and replicate protection of habitats and species across individual MPAs in order to insure against local damage or die-offs caused by mounting pressures such as marine heatwaves or pollution. Networks of MPAs that are representative of biodiversity (including species and ecosystems) in the sea basin will help accommodate climate-change effects.

Governance and policy implementation are challenged in this region, due to the war waged by Russia on Ukraine. Whilst many MPAs have been designated, progress of the Black Sea Commission in implementing the provisions of the regional Bucharest Convention and the Black Sea Strategic Action Plan, focusing on integrated coastal zone management, the ecosystem approach and integrated river basin management, has been hindered. Work has been done to harmonise indicators on species and pollution, but gaps and overlaps remain. Nonetheless, the Black Sea Commission Permanent Secretariat continues to promote regional cooperation on marine and coastal issues, including in relation to MPAs and MSP.

Cooperation between Bulgaria and Romania for marine spatial planning of the cross-border area of Mangalia-Shabla was developed through the MARSPLAN and MARSPLAN II projects. Following these, Bulgaria adopted its MSP in May 2023 and Romania adopted its MSP in November 2023. A representative from the Ministry of Regional Development and Public Works noted that Bulgaria's MSP has focussed on mapping existing activities and now needs to become more dynamic and forward-looking in its next iteration. Romania's representative from its Ministry of Development, Public Works and Administration reminded participants that MSP is a difficult balancing act between all sectors and stakeholders, having to take into account not only MPAs and biodiversity conservation but also food safety, energy security and transport safety. He welcomed the Romanian Ministry of Environment's focus on identifying areas for strict protection, discussed during the workshop.

MPA Europe, MSP-GREEN and MSP4BIO

MPA Europe, MSP-GREEN and MSP4BIO have some complementary goals. In particular, MPA Europe (along with MSP4BIO) supports the following MSP-GREEN draft recommendations which were presented during the workshop:

MSP-GREEN Draft Recommendation	MSP4BIO contribution	MPA Europe contribution
Anticipatory and adaptive capacity of MSP should be strengthened. Climate change adaptation should be among the priorities within the MSP processes and plans.	MSP4BIO provides a step-by-step guidance incorporating climate change scenarios into protection and prioritisation strategies for the development of climate-smart MPAs and MSP, thus making the MSP a management lever for climate mitigation and adaptation.	MPA Europe will identify if there are areas that may act as climate refugia for key species, which can support scenario planning for MSP. Implementing effective management of marine protected areas can support climate mitigation and adaptation. Many countries internationally are including MPAs along with MSP as adaptation components in their Nationally Determined Contributions to the Paris Agreement (Lecerf M. et al., 2023).

MSP-GREEN Draft Recommendation	MSP4BIO contribution	MPA Europe contribution
Data and knowledge on the ecological impacts of climate change should be collected, collated, and made available.	MSP4BIO provides a comprehensive overview of the available biodiversity datasets and platforms relevant for planning. The MSP4BIO Data Compilation App helps to filter all compiled datasets, data platforms, and tools, and it can be accessed here.	MPA Europe models species ranges under all Intergovernmental Panel on Climate Change scenarios, to 2050 and 2100. Our models are openly available, to be adapted and re-run in the future as more information becomes available.
Transboundary cooperation on MSP should be further strengthened to address common actions towards the EGD objectives, in particular biodiversity protection.	The MSP4BIO Black Sea test site is a cross-border site (Romania and Bulgaria) aiming to improve science-based cross-border MSP process and biodiversity integration in national and cross-border MSP by applying an integrated Ecological and Socio-Economic Framework (ESE), including Decision Support Tools (DSTs).	MPA Europe highlights that taking a national approach to protecting 30% of the sea for each country will not protect as much biodiversity as a regional 30by30 approach, so better outcomes and more efficient use of regional sea space can be delivered if countries cooperate on designating MPAs.
EGD implementation can be facilitated by greater coherence of MSP plans within sea basins.	The MSP4BIO Black Sea cross-border test site aims to harmonise MPAs and other Area Based Management Tools to integrate in MSP and support coherent networking and to shape MSP to sustain and support the evolution of the current conservation plans to become coherent, efficient and shared (at national and cross-border level).	Coherent and coordinated MSP within sea basins can support more efficient and effective design of coherent MPA networks, as noted above, alongside other strategic priorities such as offshore renewable energy.
Ecosystem-based MSP is the cornerstone for climate-smart MSP and EGD-compliant MSP in general. Healthy ecosystems and Nature-Based Solutions (NBS) are critical for adaptation and mitigation, also providing a wide range of additional benefits, such as in the case of sustainable seafood production.	MSP4BIO approach to assess the blue economy sectoral impacts on ecosystem services in different scenarios and to define the best management measures for sectors within MPAs and implementation impacts, including nature-inclusiveness.	MPA Europe supports making adequate biodiversity conservation a cornerstone of effective MSP, since it supports many EGD objectives and can support implementation of the new Nature Restoration Law. MPA Europe also provides the first marine ecosystem classification for European seas, which is required for an ecosystem-based approach.

MSP-GREEN Draft Recommendation	MSP4BIO contribution	MPA Europe contribution
MSP plans should adopt an even more strategic, forward-looking approach beyond the typical 10-year duration of a planning cycle. MSP should reinforce its role as facilitator and driver for biodiversity conservation. MSP plans should support the establishment of a coherent network of protected areas at sea and across the land-sea interface based on the elements of ecological coherence (e.g. representativity, replicability, connectivity, and adequacy).	MSP4BIO strengthen the role of knowledge-based MSP as an integrative framework to support the coherent implementation of relevant policies as well as the EU Biodiversity Strategy 2030 and the EGD objectives. That is the aim of MSP4BIO in the six test sites across 5 European sea basins: they reflect the processes at national, sub-and-supranational levels, at different geographical scales, and focus on different socio-economic and environmental challenges. Test site cases are based on the existing gaps and needs in the localities and strongly link to the real MSP process. MSP4BIO developed an Ecological Toolkit as a detailed step-by-step guide to help decision-makers navigate the complex processes of MPA prioritisation and connectivity.	By taking a more strategic and forward-looking approach, MSP can help accelerate progress towards achieving the 30by30 goal, alongside other MSP objectives. MPA Europe will provide models of optimal national and regional networks of MPAs towards the 30by30 goal which maximise the range of biodiversity protected and address ecological coherence - representativity, replicability, connectivity, and adequacy.
The availability, accessibility, and usability of specific data on the marine environment for informed MSP decision-making should be fostered.	MSP4BIO Data Compilation App published on the website (see above) and report on the specific gaps analysis to provide knowledge-based MSP for MPAs integration.	MPA Europe has added millions of new records into OBIS from GBIF and other sources. We recommend national institutes make their research data openly accessible by uploading it to European and global repositories (eg, EMODnet, OBIS and BioOracle) to support accessibility, reproducibility and replication.

WORKSHOP APPROACH

During the hybrid workshop, we presented MPA Europe's goals, scientific approaches and results to date.

We asked stakeholders for their questions during the presentation and then we asked stakeholders to consider the following three questions:

1. *How can MPA Europe's results support science-based MSP, at national, transboundary or regional levels?*
2. *How can MPA Europe's results support strengthening existing MPAs?*
3. *How can MPA Europe's results support extending the network of MPAs in the region?*

We also asked stakeholders to propose possible use cases for the project's results. A discussion was held among the whole group and the fruits of these discussions are summarised below.

In total we welcomed 25 attendees from a range of key sectors and organisations, as noted in the Appendix.

MPA EUROPE APPROACH

We presented the goals and scope of the project; the systematic approach to modelling that we have adopted; our results to date; the need for MSP to balance marine protection with other uses of the sea and our stakeholder engagement goals and work to date. The full presentation is available here.

We also presented the results of unpublished work (Zhao and Costello) prioritising land and sea areas globally using 77,880 species ranges from the IUCN Red List assessment, which revealed that parts of the ranges for about 58% of these species could be covered in the top 10% protection, two thirds of the species by 30% protection and all the species in 50% protection. This study agrees with a lot of previous studies for particular taxa.

This new study, together with the widening gulf between progress in new designations of fully protected areas compared with new partly protected areas, and the finding that the 1.2% of ocean that is currently strictly protected covers parts of the modelled ranges of 40% of all marine species and 54% of threatened species (IOC-UNESCO, 2024), suggest a focus on **designating and giving effect to 10% strict protection should be a strong priority for MPA and MSP authorities.**

In a nutshell, MPA Europe is mapping the optimal locations for marine protected areas in European seas to support science-based marine spatial planning. Conservation and restoration of marine ecosystems underpins sustainable use and the blue economy, and therefore the two concepts should be taken together as a single goal for MSP, rather than separated. For example, many studies show how MPAs rebuild fisheries and sustain tourism, whilst safeguarding biodiversity and helping to adapt to climate change (Costello, 2024). Areas with no or very few pressures are essential to understand what Good Environmental Status (GES), as defined by the Marine Strategy Framework Directive (MSFD), looks like and to act as controls for comparison with similar areas under a range of human pressures.

Rather than bias our approach to particular species or habitats, we take a holistic, data-driven approach to map the full range of marine biodiversity and of blue carbon stores so that protection of either or both can be optimised under a changing climate. Our results will be shown in an online atlas in 2025 and available for use by marine spatial planners and any other stakeholders with an interest in optimising networks of protected areas or in particular groups of species or habitats.

Whilst MPAs are ultimately a societal choice, we think it is also essential that decisions regarding the establishment of networks of MPAs are informed by an understanding of how species are currently distributed and how this may be impacted by climate change. As the Intergovernmental Panel on Climate Change (IPCC) notes, protected areas are key elements of adaptation, but they need to be planned and managed in ways that take account of climate change, including shifting species distributions and changes in biological communities, and ecosystem structure and function (IPCC, 2022). Adaptation to protect ecosystem health and integrity is essential to maintain ecosystem services, including for climate change mitigation and the prevention of greenhouse gas emissions. Furthermore, protected and conserved areas are the most effective tool to address both biodiversity loss and climate change within a timeframe that reflects the required urgency (Young V. et al., 2024).

We do not constrain our analysis to particular habitats and species but consider all marine biodiversity groups, except for the Viruses, Protozoa, Fungi, Bacteria, and Archaea kingdoms. Modelling the ranges of species using spatially standardised data layers can remove the bias inherent in using sampling data alone.

In 2025 we will run prioritisation scenarios at regional, country and territorial seas levels, and we expect that regional prioritisations of networks of protected areas will be more efficient in maximising the range of biodiversity that is protected than the cumulative combination of national or sub-national prioritisation analyses. This type of analysis can support the incorporation of MPAs in MSP at regional, transboundary and national scales.

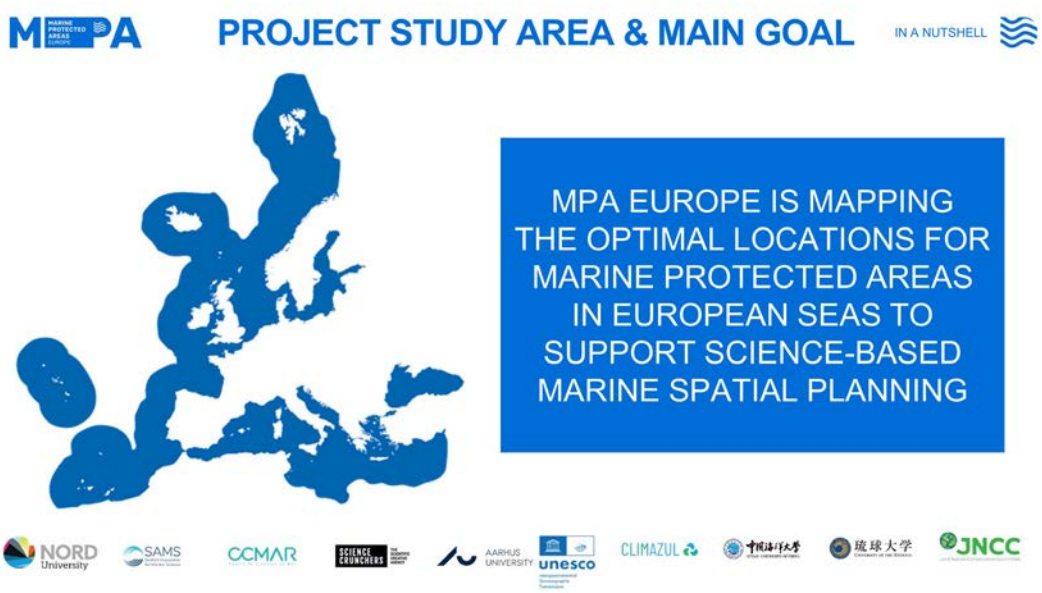

Figure 3. *Goal of MPA Europe*

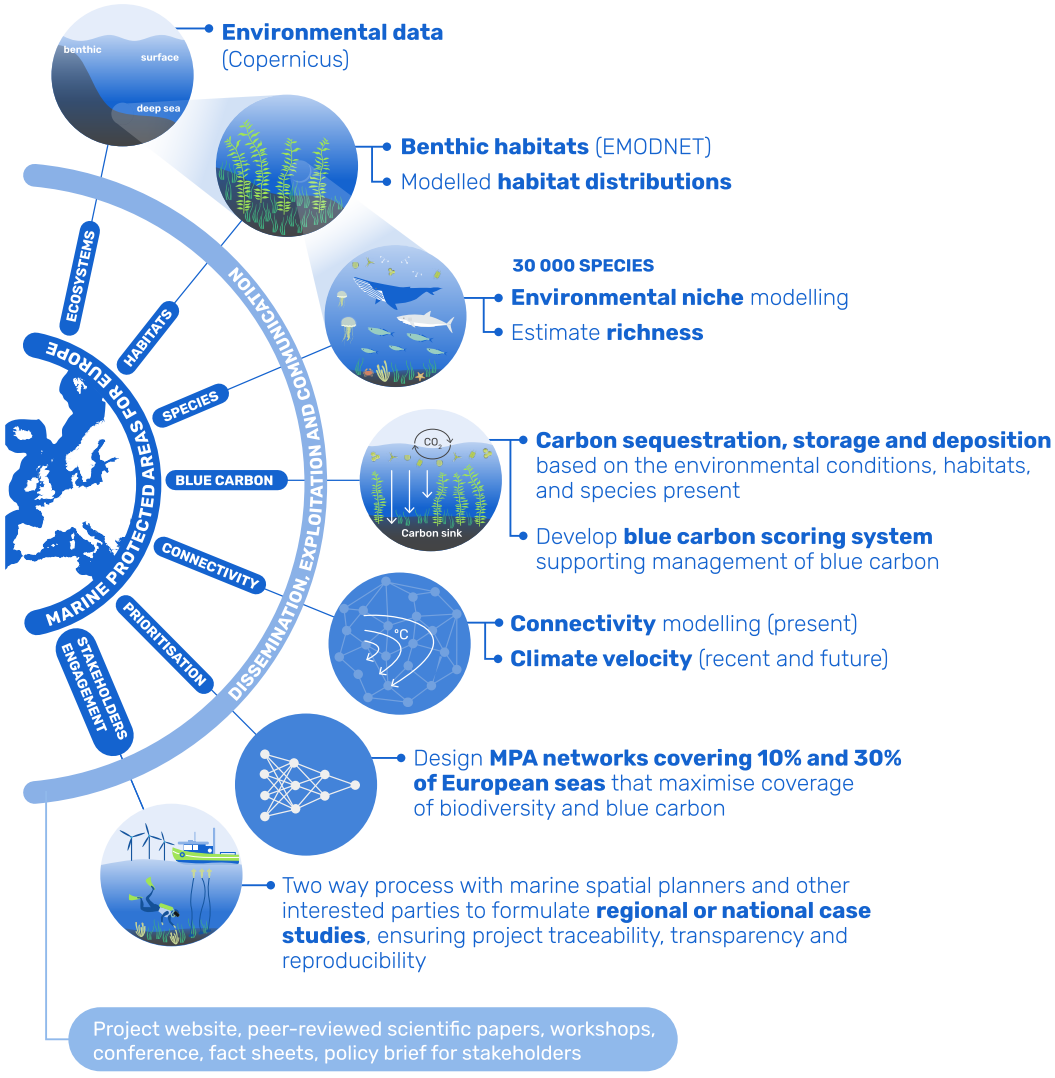

Figure 4. *The components of the MPA Europe project.*

MPA EUROPE RESULTS TO DATE

Our results so far include the following:

1. The first marine ecosystem classifications for Europe's seas

The term ecosystem is used very loosely but is imbedded in European and international policies. For data-driven systematic conservation planning we need a data-driven definition. Thus, we use the original "ecosystem function" concept as a region where energy flows are greater within the area than between adjacent areas, and we use ecologically relevant environmental variables to demarcate these areas.

For the purposes of the MPA Europe project, "ecosystems" are defined as "enduring, spatially bounded environments where biological and energy interactions are greater within than with other ecosystems" (Zhao Q. et al., 2019). These classifications are driven by a wide range of spatially complete and standardised environmental data that reflect both ecosystem conditions and functioning. Our methodologies and data parameters may be found here.

Using this basis, we created the first marine ecosystem classification for surface and near seabed waters of Europe and then created an additional depth-integrated marine ecosystem classification for Europe. Overall our analysis yielded 8 distinct clusters across the different depth ranges for the project area.

Three of the eight clusters we identify are relevant for the Black Sea:

1. *The surface layers to around 150 m-200 m depth Black Sea's waters fall within cluster 3, which is characterised by the lowest salinity among the clusters, along with relatively high dissolved oxygen, low to moderate nitrate levels, average ocean temperature, slightly alkaline pH, low phosphate levels, and moderate phytoplankton levels.*
2. *Between 150 m and 250 m depth, Cluster 6 manifests and is characterised by moderate oxygen levels and relatively high nitrate concentrations.*
3. *Finally areas of water below 200-250 m depth in the Black Sea form a unique cluster in Europe's seas. Cluster 8 exhibits significantly lower oxygen and nitrate levels but higher phosphate concentrations and lower pH. Further details of the cluster analysis and methodology may be found here.*

This analysis highlights that the Black Sea's particular environmental conditions are likely to support distinctive assemblages of flora and fauna and hence the need for a self-contained, regionally coherent network of marine protected areas in the European context, which nonetheless incorporates connectivity to other marine ecosystems through the Sea of Marmara. Maintaining connectivity across transitional areas between different marine ecosystem clusters through MPAs is important in supporting climate-induced range shifts (Assis J. et al., 2021). Connectivity and climate change impacts on it should be factored into adaptive MSP (Abecasis D. et al., 2023).

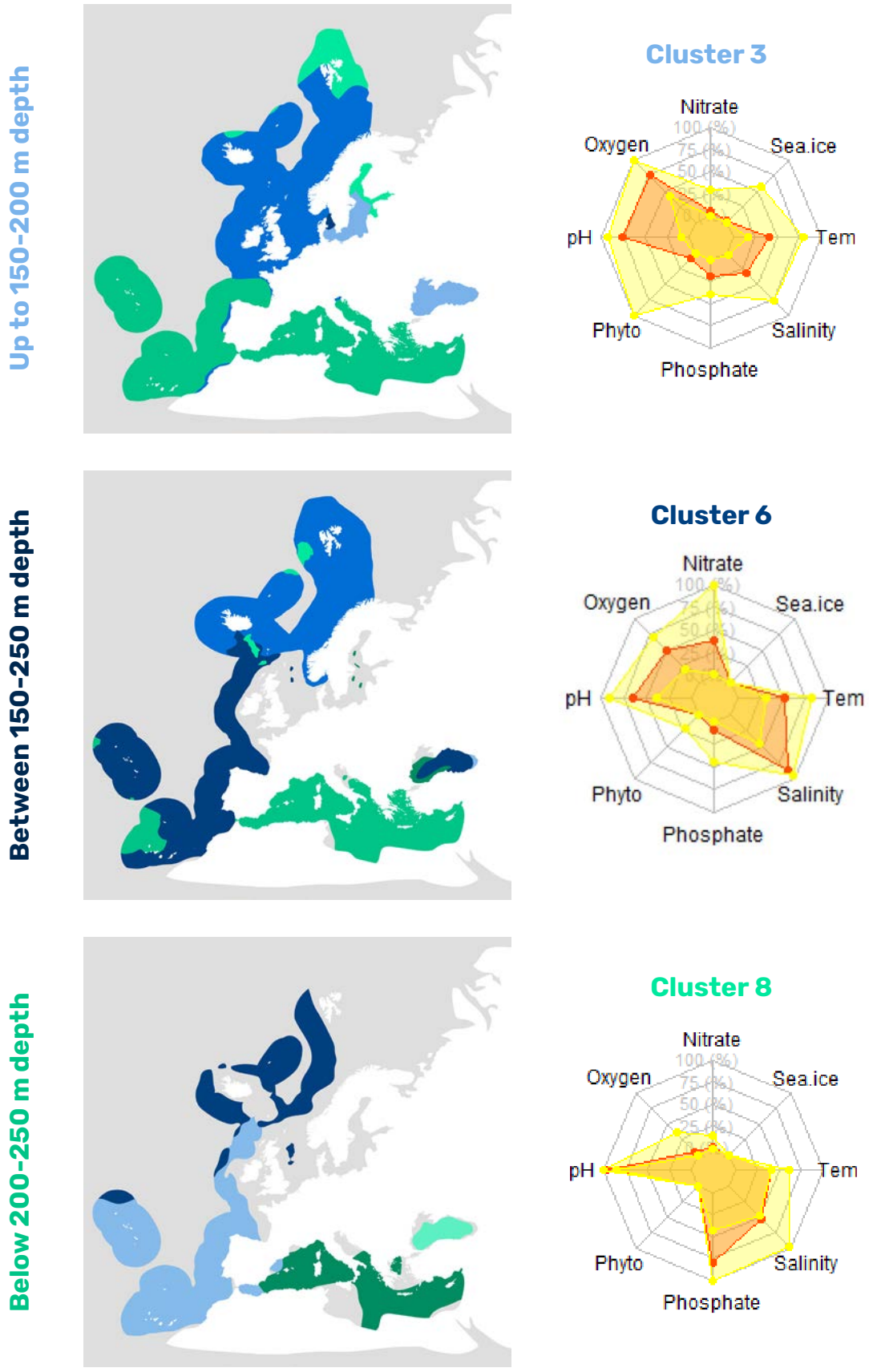

Figure 5. *The three marine ecosystem clusters based on environmental data (oxygen (Oxygen), nitrate, ocean temperature (Tem), pH, phosphate, phytoplankton (Phyto), salinity, sea ice cover (Sea.ice)), by depth found for the Black Sea. Source: MPA Europe.*

2. Maps of species richness in European seas based on multiple indicators

Our species distribution models are based upon actual observations, statistical estimators, and modelled geographic range maps. There are over 30,000 marine species in European seas with available occurrence records in at least one of the data platforms we used, and 606 species were chosen for testing our framework and were modelled as part of this work. We expect to model the ranges of ~15,000 species by the end of the project. Our methodology (Figure 6) may be found here and species distribution models will be published on the Ocean Biodiversity Information System (OBIS) database in August.

3. Potential geographic distributions of important biogenic habitats in European seas

Habitat-forming species significantly alter their environment by enhancing its structural complexity, thereby creating resources that support a richer diversity and abundance of species. We used Stacked Species Distribution Models to begin to forecast the distribution of biogenic habitats across European seas, considering nine distinct groups of habitat-forming organisms (e.g., Figure 7). These groups include habitat forming algae; bryozoan reefs; cold-water coral reefs; coralligenous platforms; deep-sea sponge grounds; mollusc reefs (composed of Gastropoda and Bivalvia species); polychaete reefs (mainly Sabellaridae); seagrass meadows; and shallow-water sponge reefs. The list of species modelled so far and the methodology we used may be found here. We continue to refine our modelling framework and the more complete habitat range maps and results will be compared to the biogenic habitat maps available on the European Marine Observation and Data Network (EMODnet) platform. The results suggest a reduced probability of occurrence of habitat forming macroalgae in parts of the Mediterranean coasts but that regardless of climate warming the species will still be present throughout their present range.

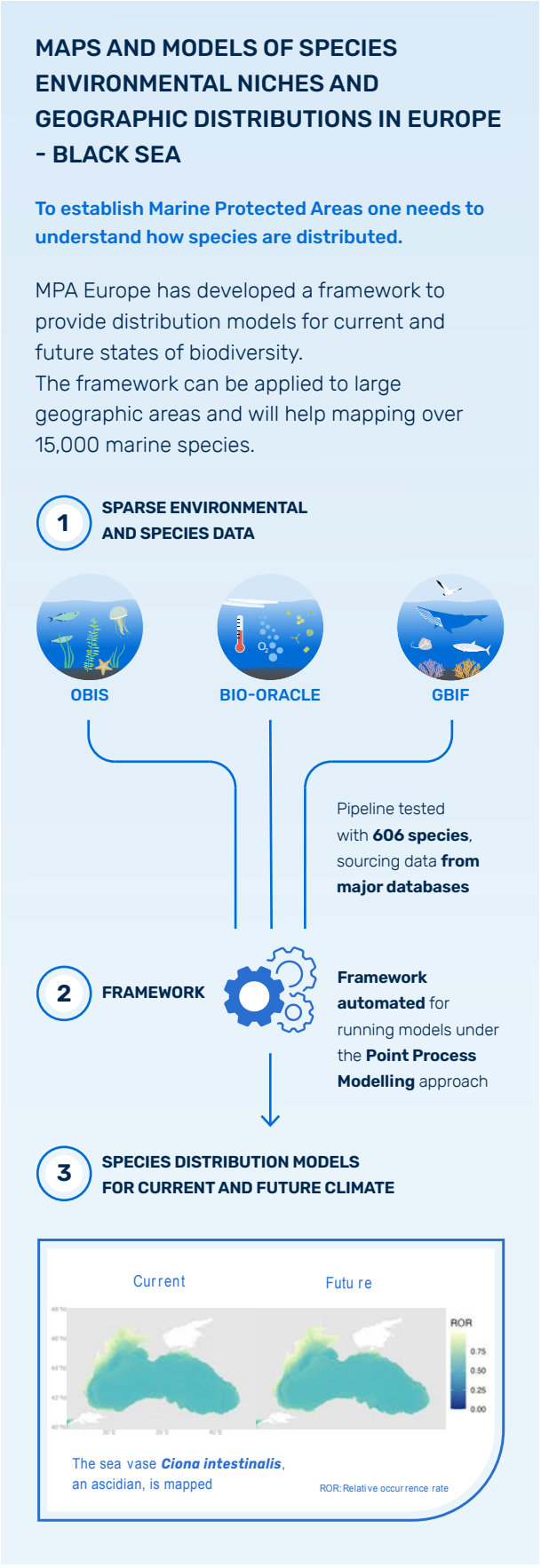

Figure 6. *Infographic on methodology framework used to produce species distribution maps. Source: MPA Europe.*

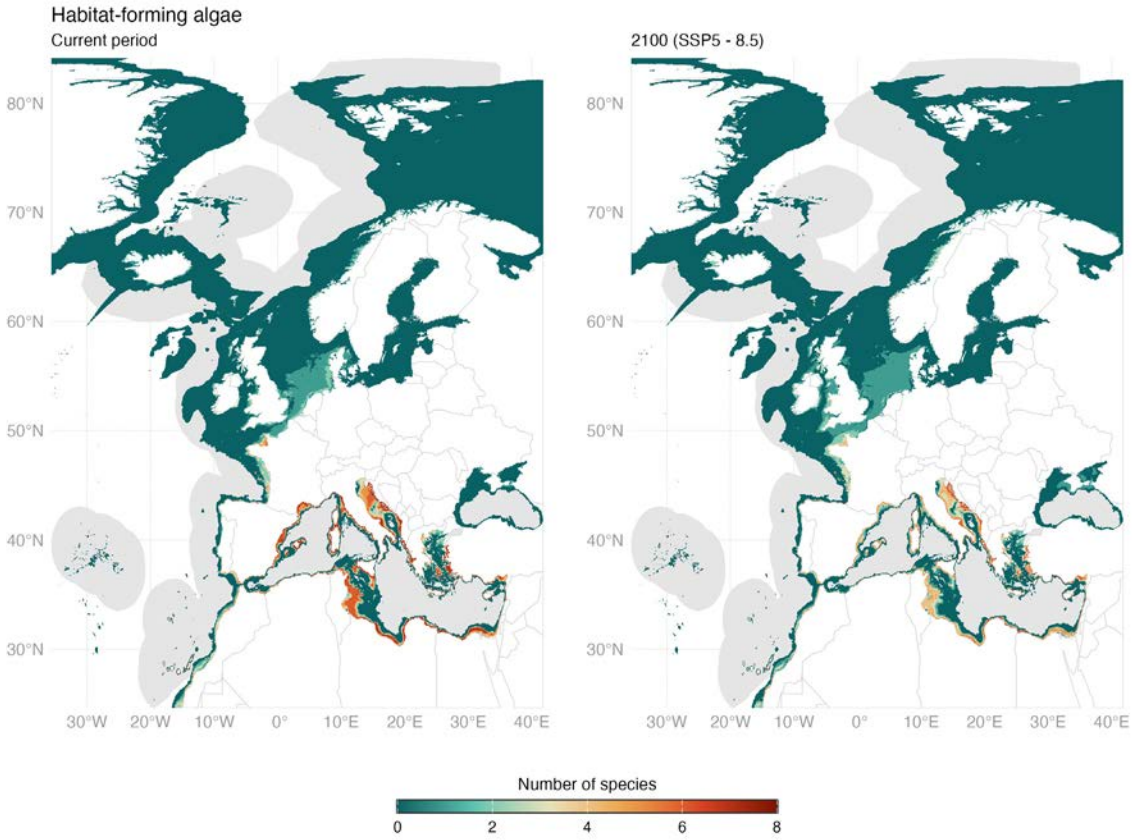

Figure 7. *Stacked distributions of 8 species of habitat-forming macroalgae according to species distribution models in the current period (left panel) and under climate scenario SSP5-8.5 (Fossil-fueled Development ("Taking the Highway") - very high GHG emission) for 2100 (right panel). Areas with darker red color are those with the highest number of species co-occurring. Results suggest that under the most extreme climate change scenario there will be a reduction in the area suitable for species in the Mediterranean. Source: Principe et al (2023).*

4. Sedimentary blue carbon database and maps

Marine sediments are one of the major organic carbon (OC) reservoirs on the planet and the efficiency of these sinks are important in regulating earth's climate. The protection of carbon sinks requires data on their location and size as well as knowledge on drivers. Blue carbon research has mainly focused on the management of vegetated coastal habitats to protect and increase their capacity to capture carbon dioxide and retain OC while also supporting biodiversity and other key ecological functions. The blue carbon concept is expanding, and marine sediments are categorised as "blue carbon stores" where human action may be able to increase these sinks. In addition to further studies on how protection may affect marine sediment OC levels, there is a need for a robust understanding of the factors controlling these. However, despite decades of research into the factors controlling OC storage, relatively few larger scale studies have attempted to link OC levels across diverse seafloor habitats with variables regulating these standing stocks.

In April 2023 the scientific community was invited to contribute data to establish a Euro-Carbon database of Total Organic Carbon (TOC) stocks in marine sediments, i.e., blue carbon. Researchers were encouraged to submit both previously published and unpublished data. For this purpose, we created a template that all contributors used. The current version of the database contains the data received so far and the final database will, in addition, encompass data from existing databases and scientific literature. Key information on sampling sites, methods and analytical techniques were provided along with the data. From our data call, we received 34,815 data entries (updated on 31st October 2023) of which 25,751 consisted of TOC values that were specified as "directly measured". Averaging the TOC values from the top 10 cm of each sediment core, we obtained 6,847 unique datapoints.

Our results show that the main environmental predictors of sediment OC levels were wave exposure (which also drives patterns of biodiversity), maximum temperature, distance from shore and water depth, with highest OC content in sheltered, cool, shallow near-shore locations. The highest OC contents were generally found in muddy sediments, saltmarshes, seagrass meadows (in particular meadows of Posidonia oceanica) and in fine mud and coarse and mixed sediment substrata. These findings laid the foundation for development of a blue carbon scoring system and related blue carbon maps. The blue carbon maps will, together with the biodiversity maps for species and biogenic habitat distributions, serve as a basis for proposing a network of MPAs that maximises marine biodiversity and carbon stocks across European seas as part of a systematic conservation planning approach.

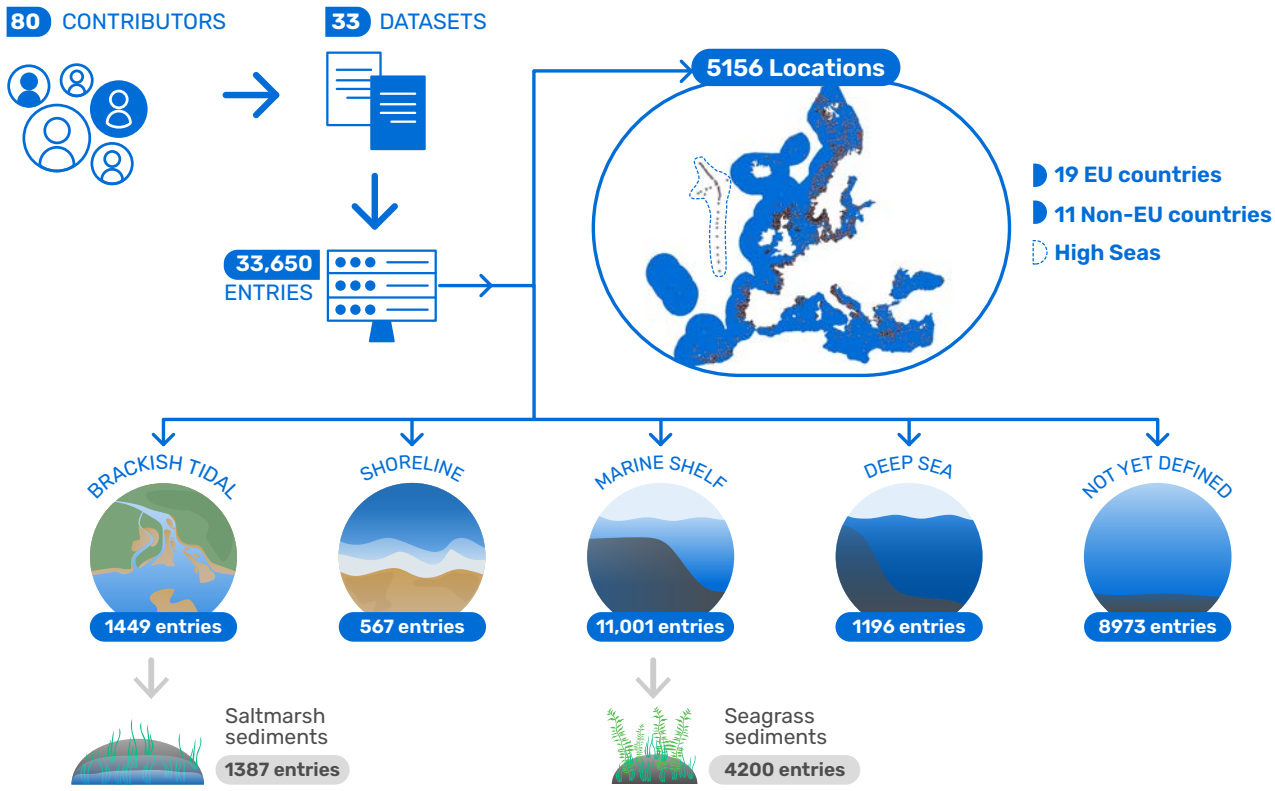

Figure 8. *Infographic on the MPA Europe Organic Carbon database (also called Euro-Carbon). Overview of the data received until 31st October 2023. Please note that this does not represent the final version of the project output. Source: MPA Europe.*

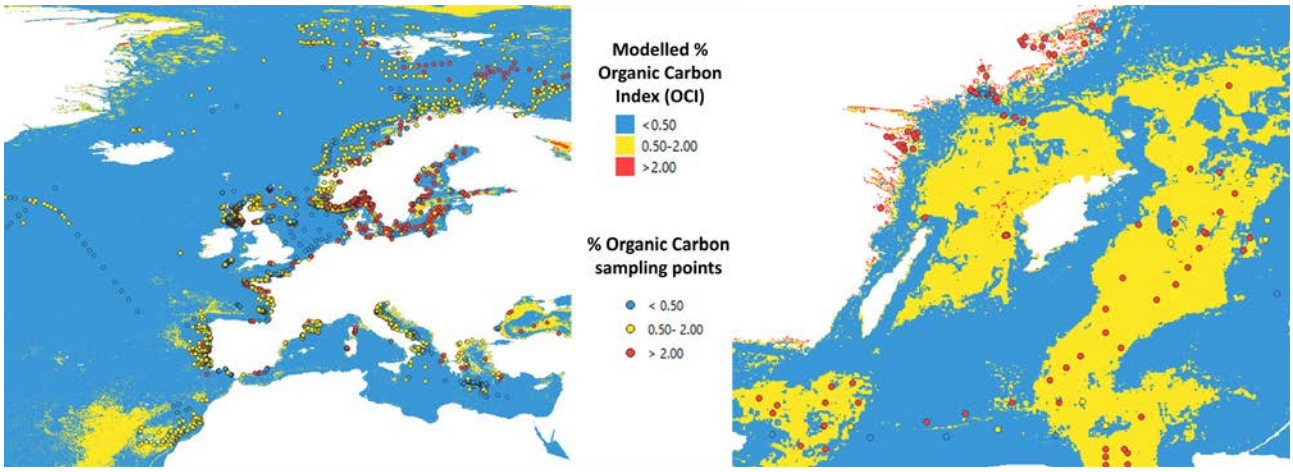

Figure 9. *The locations of where samples of organic carbon (OC) in sediments were collected are overlaid on the modelled distribution of predicted OC distribution with 3-level scale at a European seas scale (left panel) and the eastern Black Sea (right panel). OCI is a measure of OC content (in percentage) in the top 10cm of marine sediment. Source: MPA Europe.*

STAKEHOLDER FEEDBACK

As noted earlier, after answering questions from stakeholders, we asked our participants to consider the following three questions:

1. *How can MPA Europe's results support science-based MSP, at national, transboundary or regional levels?*
2. *How can MPA Europe's results support strengthening existing MPAs?*
3. *How can MPA Europe's results support extending the network of MPAs in the region?*

We also asked stakeholders to propose possible use cases for the project's results.

During the discussion, we provided an online demonstration of the new species distribution models - see screenshot below. This included demonstrating the model for a species; pointing to information on the species' thermal range (estimated from its occurrence range), habitat maps and diversity; demonstrating a slider for climate scenarios for the species over time and showing the model performance information. We noted there are also options to download the files and access the model code. The OBIS team, part of the MPA Europe consortium, can support stakeholders to upload national data to this global marine biodiversity repository.

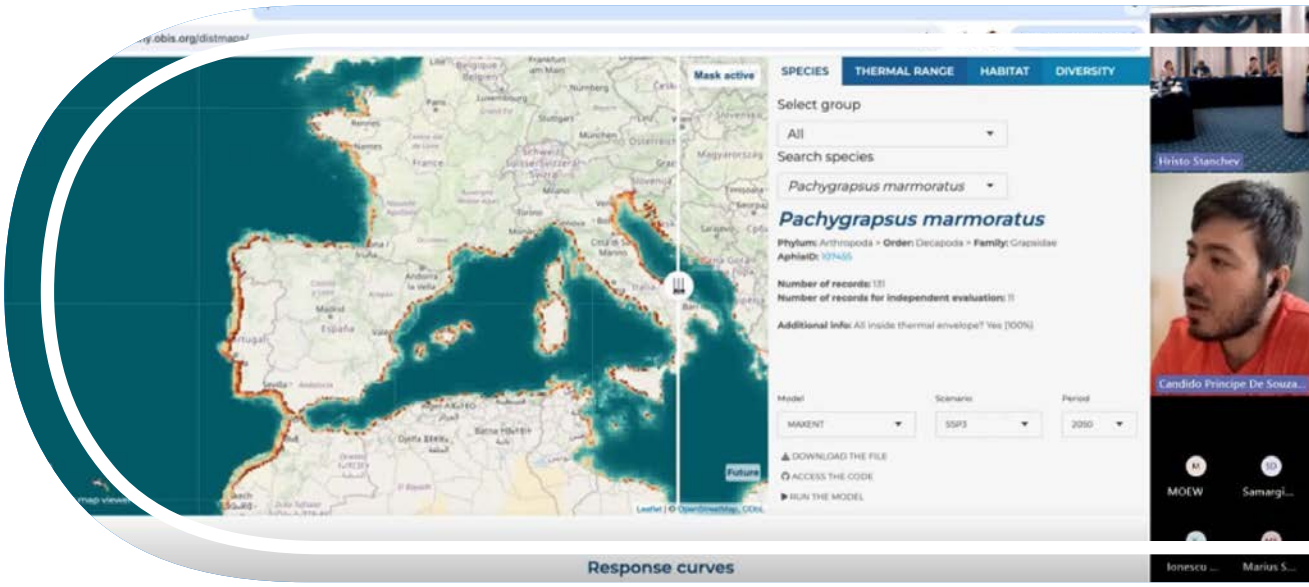

Figure 10. *Screenshot from Black Sea stakeholder workshop with Silas Principe (MPA Europe and OBIS) presenting a new online species distribution model.*

KEY POINT	IN DETAIL
How can MPA Europe's results support science-based MSP?	
Environmental protection is quite lacking in MSP; how can we integrate it better?	You made a helpful point during your presentation about the value of the 10% for biodiversity protection and where to have it, for the whole seabasin. MSP is a living document and can be improved, but environmental protection is quite lacking in the whole process. How can we integrate this aspect and explain to the community that MPAs are not to the detriment of economic growth, but actually support it? How can we include those 10% strictly protected areas as close to the shore as possible, where most of the habitats and human activities are? **Our response**: To protect an optimal 30% for Europe, some countries may need to protect more biodiversity, and others less, because biodiversity is not distributed evenly. Taking a national approach to 30% for each country will not protect as much biodiversity as a regional one, so it would be better if countries cooperated. Alongside our species models, environmental data layers and marine ecosystem classification, we are also drafting a new biogeographic classification which takes all the marine species data for Europe and clusters it into regional areas. This will tell us if the species composition is very different by regions. We are starting our prioritisation analysis in August, using Zonation software which is freely available.

KEY POINT	IN DETAIL
How can MPA Europe's results strengthen existing MPAs?	
MPA Europe provides a welcome biodiversity-first approach, providing core data which needs to be available ahead of stakeholder consultations on MPAs.	We highly appreciate the project's focus on the biodiversity issue, because in Romania and probably elsewhere, too early in the process of identifying optimal locations and extensions of Protected Areas, external economic stakeholders jump in and there is a lot of confusion, since environmental decision-makers are trying to take into account social and economic factors without firstly addressing the need to identify areas with high biodiversity potential and higher value for biodiversity. We think your ecosystem-based approach is very welcome.
How can MPA Europe's results support extending the network of MPAs in the region?	
MPA Europe can support a regional shared approach to identify and designate MPAs and 10% strictly protected areas.	We think your support is most valuable at regional level, for example in helping Bulgaria and Romania reach a common approach on the identification and designations of their Protected Areas and, within those, the 10% strictly protected cores. This work is very helpful for all the current processes in Bulgaria and Romania for MPAs - extension of them and identifying 10% strict protection. Would it be possible to request modelling for a certain area, and if so when? **Our response**: Anyone can use Zonation to re-run the analyses using our data, or new data, or with different weightings for certain species, eg, for threatened species. The data and code will be available online and should be available in the first week of July. All the underlying data is open - from OBIS or GBIF - and can be downloaded. We are trying to make all the code and software open through the same platform where the maps will be hosted, so you can run your own versions with different variables (e.g. different areas/regions, species). We are creating a framework that can be replicated. Overall this is an amazing development. Currently there are two sources for marine species range maps, the IUCN Red List assessment, based on expert-derived polygons, where the underlying data is hard to find; and AquaMaps, which uses FAO boundaries and so is not easy to apply for regional seas. OBIS on the other hand is developed continuously and hosted permanently by IOC-UNESCO.

KEY POINT	IN DETAIL
Do you have suggestions for potential case uses?	
Test the species richness and distribution models for the Romanian southward coast, from shoreline to 25m or 30m depth, where there are a lot of biogenic habitats.	We need to see whether the model corresponds to reality. It is important to us to bridge the regional modelling approach of your models to the local scale, by increasing the resolution. EMODnet Biology has lots of useful information on benthic species distributions, but there is a need to increase the precision of the data. Bulgaria is ahead of Romania in considering this. As a case use scenario, it will be very useful to test the models especially with regards to species richness and distribution for the Romanian southward coast, from shoreline to 25 or 30m depth, where there are a lot of biogenic habitats that need protection. How can the model resolution be improved and will the model be validated with some in situ data? Do you have an approach for linking those marine habitats on the Red List for the Black Sea into the models? **Our response**: Our model resolution is 1 km; it's not possible to go finer because the environmental data will not be more accurate below this, since some of it is satellite-derived. We cannot provide a solution when it comes to deciding MPA boundaries; you have to decide those with local information and local stakeholders. For biogenic habitats we can't currently predict where we will have, for example, mussel beds or seagrass meadows, because whilst we know they may both be present, whether they form a large habitat or not we can't yet predict. We are still testing whether we can model this. When we have finished our models then we can test them with field observations and other data layers.
Overlay MPA Europe results with Natura 2000 data layers.	Do you integrate data from the standard Natura 2000 forms, because if you want to propose MPAs in Bulgaria, they are normally based on the Natura 2000 maps? The Bulgarian Biodiversity Foundation are waiting to see new public data on structure and function for marine Natura 2000 habitats, because in practice decisions have to be based on this information. The Ministry of Environment and Water of Bulgaria have commissioned new data on marine and coastal habitats. However, there was a scientific dispute on subtypes and some definitions, and extra time was needed to get expert opinions. The new data will be made public this year. **Our response**: We discovered during a recent IUCN webinar that information provided to the European Environment Agency (EEA) is not always publicly available. In Denmark an IUCN evaluation found that only about 30% of its designated areas qualified as Protected Areas. So what counts towards 30by30 is not yet clear. We think it is a good idea to overlay Natura 2000 sites with our maps. We are also collaborating with the Joint Research Centre and the EEA on indicators for marine biodiversity.

KEY POINT	IN DETAIL
Do you have any other comments or questions?	
How are you treating invasive species in your models?	**Our response**: We're modelling all species, based on occurrence records. Whether to include them all in the prioritization process is a separate decision; species can be assigned different weightings or removed altogether. We plan to remove all human-introduced species (including invasive) from the prioritisation. The World Register of Introduced Marine Species (WRIMS) was set up as part of the World Register of Marine Species (WoRMS) and is linked to OBIS. Some species are both native and invasive, in different parts of Europe.
Did you notice any difference in data availability for the Black Sea?	**Our response**: We did not, because we are handling large amounts of data. You can open the mapper in OBIS to explore all the data available. This indicates how much data is available in the Black Sea compared to other regions. We are also working on a product to quickly extract this type of information.
How do we access MPA Europe's data and models?	Having species distribution models and areas with higher biodiversity identified is important information for decision making. How will the information be disseminated and when? The Organisation of the Black Sea Economic Cooperation offered to help disseminate project links via its Black Sea Knowledge Centre. The Black Sea Commission Permanent Secretariat requested links for their database. **Our response**: All our results are being published to the European Commission and on Zenodo. We also share news items whenever our papers come out. Project deliverables will also be shared on the EU MSP platform. We will produce an atlas for all Europe's seabasins during the first half of 2025 and the data layers will be published on EMODnet, or via OBIS or an ArcGIS platform. This is still to be decided. Please also feel free to contact us at any time and we can share links to our information.

NEXT STEPS

We would like to thank the MSP-GREEN and MSP4Bio teams for supporting a joint approach to convening stakeholders and identifying cross-project synergies, and all stakeholders who were able to join us for sharing their feedback. We invite stakeholders to contact us with any further suggestions for case studies.

MPA Europe will co-host two further regional workshops this year, for the Atlantic and North Sea region and the Mediterranean Sea region, to seek stakeholder feedback following the same approach as for the Black Sea and Baltic Sea regions (our Baltic Sea workshop report is available here). The outcomes of these regional discussions will inform our Policy Brief in 2025.

MPA Europe will also host an international conference on MPAs in MSP in July 2025 in Bodo, Norway. We encourage all stakeholders to save the date and register here for updates.

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APPENDIX - Workshop Participants

Organisation	Sector represented	Country of organisation	Attending
Ministry of Environment and Water of Bulgaria	National authority or ministry	Bulgaria	Online
Ovidius University of Constanta, Romania	Scientific and research institute	Romania	Online
s. Pro/SUBMARINER Network (representing MSP4Bio)	Consultancy	Germany	Online
HELCOM (presenting MSP4Bio)	Regional organisation	Finland	Online
Institute of Marine Sciences, National Research Council (representing MSP-GREEN)	Horizon Project	Italy	Online
Institute of Marine Sciences, National Research Council (representing MSP-GREEN)	Horizon Project	Italy	Online
Ministry for Development, Public Works and Administration of Romania	National authority or ministry	Romania	Online
ProBiodiversitas	Consultancy	Romania	Online
Ministry for Development, Public Works and Administration of Romania	National authority or ministry	Romania	Online
EU MSP platform	Assistance mechanism	Romania	Online
Mare Nostrum	NGO	Romania	Online
Black Sea Commission Permanent Secretariat	Regional organisation	Turkey	In person
Black Sea Basin Directorate	Regional organisation	Bulgaria	In person
Bulgarian Biodiversity Foundation	NGO	Bulgaria	In person
Bulgarian Biodiversity Foundation	NGO	Bulgaria	In person
Center for Coastal and Marine Studies	Scientific and research institute	Bulgaria	In person
Center for Coastal and Marine Studies	Scientific and research institute	Bulgaria	In person
Ministry of Regional Development and Public Works of Bulgaria	National authority or ministry	Bulgaria	In person
National Institute for Marine Research and Development "Grigore Antipa"	Scientific and research institute	Bulgaria	In person
National Institute for Marine Research and Development "Grigore Antipa"	Scientific and research institute	Bulgaria	In person
National Institute for Marine Research and Development "Grigore Antipa"	Scientific and research institute	Bulgaria	In person
Organisation of the Black Sea Economic Cooperation	Regional organisation	Turkey	In person
Sea Harmony Ltd	Blue economy enterprise	Bulgaria	In person
Bulgarian Biodiversity Foundation	NGO	Bulgaria	In person
Center for Coastal and Marine Studies	Scientific and research institute	Bulgaria	In person

How to cite:

B. Bramley, T. Smanis, A. Urgeghe, M.J. Costello, A.M. Addamo, S.C. Principe (2024).
BLACK SEA STAKEHOLDER WORKSHOP. 20th June, 2024. 24 pages.
https://doi.org/10.5281/zenodo.12749872

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