ACCOBAMS

PROGRESS REPORT OF THE ABIOMMED PROJECT

ABIOMMED
SUPPORT COHERENT AND COORDINATED
ASSESSMENT OF BIODIVERSITY
AND MEASURES ACROSS
MEDITERRANEAN FOR THE NEXT 6-YEAR
CYCLE OF MSFD IMPLEMENTATION

❖ **PROJECT OBJECTIVES**

ABIOMMED – "Support coherent and coordinated assessment of biodiversity and measures across Mediterranean for the next 6-year cycle of MSFD implementation" - is an EU research project funded under DG ENV/MSFD 2020 CALL.

The overall purpose of ABIOMMED is to support the competent authorities of the Mediterranean region, as well as the UNEP/MAP for a (sub)regional cooperation for the preparation of the next 6-year cycle of MSFD implementation through the marine strategies, by setting up working arrangements, meetings, workshops, experts' platforms and synergies with other projects and initiatives and to ensure feedback from EU or UNEP/MAP relevant working and technical groups.

The general objectives of ABIOMMED project are to:

(1) Support the (sub)regional assessment of the extent to which GES has been achieved, focusing on implementation of the 2017 GES Decision through practical delivery of Article 8 assessments (i.e., defining lists of elements, threshold values and integration rules, as part of the process to prepare the assessments), for the following specific topics:

- o D1: Coordinated (regional) assessments, especially of highly mobile species groups (taking into account their broad distributional range) and of under-reported groups (e.g., cetaceans, sharks and other non-commercial fish species); support when relevant the work of the MSFD Expert Networks (all regions);

- o D1C6 and D6: identification of ecologically relevant scales and areas for assessment of pelagic and benthic (broad) habitat types, taking account of work by TG Seabed, EUSeaMap modelling approaches and Copernicus data (particularly NE Atlantic Ocean and Mediterranean Sea);

- o Coordination and delivery of Article 8 (sub)regional assessments for specific descriptors, contributing also to UNEP/MAP's QSR 2023 and complementing the EcAp III project for South Mediterranean countries (Mediterranean Sea).

(2) Support the quantification (notably ex-post) of the effect of the PoMs.

Support the ex-post assessment of programmes and measures adopted under UNEP/MAP, with a specific focus on their costs and benefits, and on cross-border aspects that involve both the EU context and the third Countries (Mediterranean Sea).

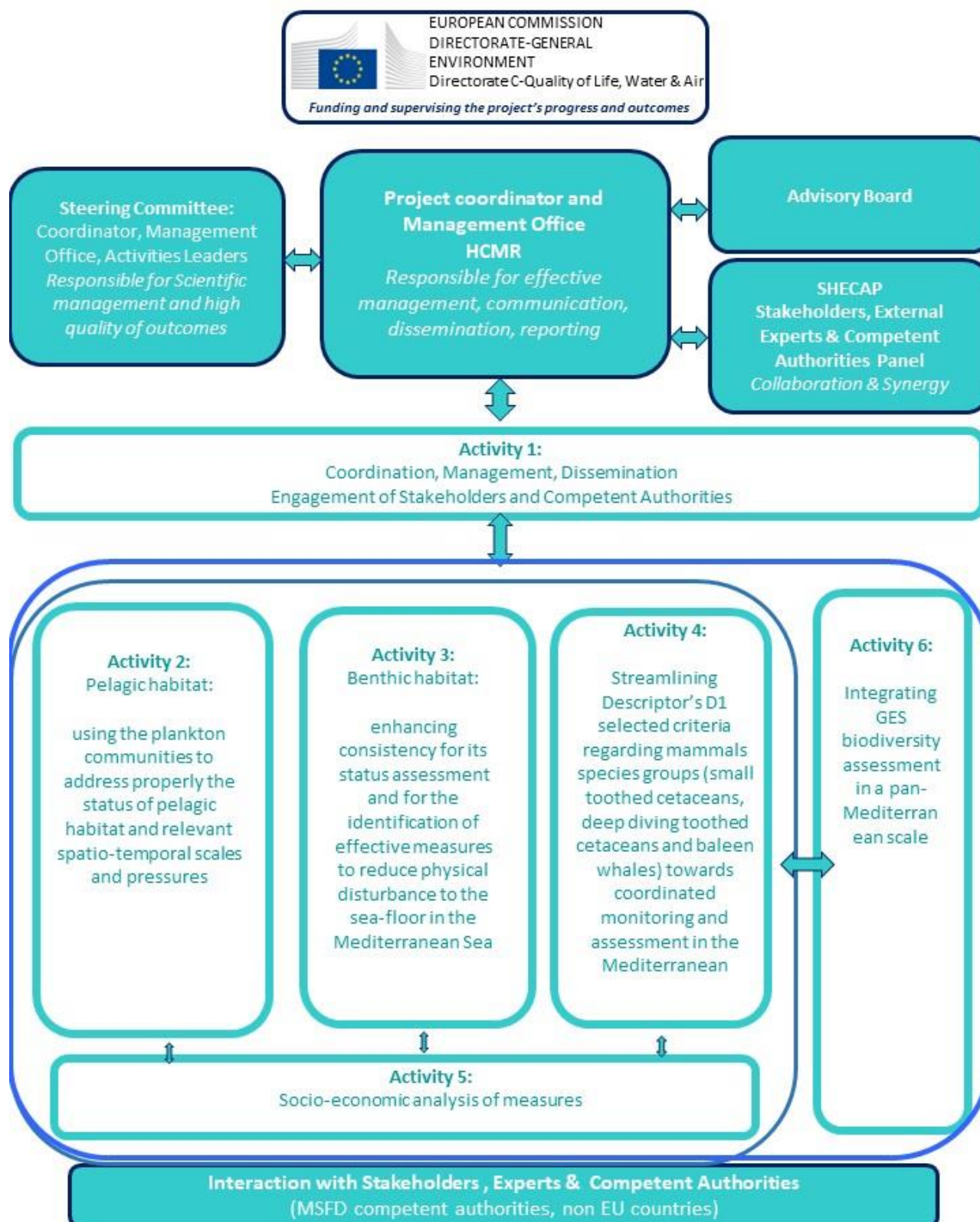(3) Support the establishment of new (sub)regionally coordinated measures.

Support the development of effective regional measures to reduce the levels of physical disturbance to the seafloor from fisheries and other relevant activities, taking account of work by TG Seabed (all regions).

The project runs for 24 months starting on 1st July 2021.

ABIOMMED is coordinated by **HCMR-IO** (Hellenic Centre for Marine Research, Institute of Oceanography, Greece) and the project partners are: **ISPRA** (Institute for Environmental Protection and Research, Italy), **CNR** (National Research Council, Italy), **CONISMA** (Consorzio Interuniversitario Scienze del Mare, Italy), **IWRS** (Institute for Water of the Republic of Slovenia), **NIB** (National Institute of Biology, Slovenia), **IOF** (Institute of Oceanography and Fisheries, Croatia), **Univ. of Athens-NKUA** (Greece), **CSIC-ICM** (Institut de Ciències del Mar, Spain), **Fundación AZTI** (Spain), the **ACCOBAMS Secretariat** (based in Monaco), **Tethys Research Institute** (Italy), **EcoOcéan Institut** (France), **UNEP/MAP Blue Plan** (based in France) and **UNEP/MAP-SPA/RAC** (based in Tunisia).

The project is structured in six Activities interconnected as shown in Figure 1 on the next page:

- Activity 1 - Coordination/Management, Dissemination – Engagement of Stakeholders and Competent Authorities (Lead HCMR);

- Activity 2 - Pelagic habitat: using the plankton communities to address properly the status of pelagic habitat and relevant pressures (Co-Lead NIB & IOF);

- Activity 3 - Towards ecologically-relevant scales and areas for assessment of benthic habitat and effective measures to reduce physical disturbance to the sea-floor in the Mediterranean Sea (Lead: ISPRA);

- Activity 4 - Streamlining Descriptor's D1 selected criteria regarding mammals species groups (small toothed cetaceans, deep diving toothed cetaceans and baleen whales) towards coordinated monitoring and assessment in the Mediterranean (Lead: ACCOBAMS);

- Activity 5 - Socio-economic analysis of measures (Lead: Plan Blue);

- Activity 6 – Integrating GES biodiversity assessment in a pan-Mediterranean scale (Lead: SPA/RAC).

EUROPEAN COMMISSION
DIRECTORATE-GENERAL
ENVIRONMENT
Directorate C-Quality of Life, Water & Air

Funding and supervising the project's progress and outcomes

Steering Committee:
Coordinator, Management Office, Activities Leaders
Responsible for Scientific management and high quality of outcomes

Project coordinator and Management Office HCMR
Responsible for effective management, communication, dissemination, reporting

Advisory Board

SHECAP Stakeholders, External Experts & Competent Authorities Panel
Collaboration & Synergy

Activity 1:
Coordination, Management, Dissemination
Engagement of Stakeholders and Competent Authorities

Activity 2:
Pelagic habitat:

using the plankton communities to address properly the status of pelagic habitat and relevant spatio-temporal scales and pressures

Activity 3:
Benthic habitat:

enhancing consistency for its status assessment and for the identification of effective measures to reduce physical disturbance to the sea-floor in the Mediterranean Sea

Activity 4:

Streamlining Descriptor's D1 selected criteria regarding mammals species groups (small toothed cetaceans, deep diving toothed cetaceans and baleen whales) towards coordinated monitoring and assessment in the Mediterranean

Activity 6:

Integrating GES biodiversity assessment in a pan-Mediterranean scale

Activity 5:
Socio-economic analysis of measures

Interaction with Stakeholders, Experts & Competent Authorities
(MSFD competent authorities, non EU countries)

❖ **ACTIVITY 4**

Within ABIOMMED, the ACCOBAMS Secretariat is in charge of the coordination of Activity 4 "Streamlining Descriptor's D1 selected criteria regarding mammal's species groups (small toothed cetaceans, deep diving toothed cetaceans and baleen whales) towards coordinated monitoring and assessment in the Mediterranean".

Activity 4 focuses on finding the way to integrate this information deriving from these different types of studies. Relying on ACCOBAMS mandate to promote regional cooperation, this activity will support the establishment of a regional network/working group of experts/managers from the different EU Mediterranean countries aimed at strengthening the coordination for monitoring cetacean MSFD related criteria, including the definition of proposals for regionally harmonized monitoring strategy and thresholds values. It will also support some analytical activities related to data gathering, through detailed assessment of monitoring scales and methods, including a pilot on the potential interest of telemetry in the MSFD context.

The specific objectives of Activity 4 are:

-   Streamlining the monitoring of D1 cetacean related criteria in the Mediterranean Sea, in particular by supporting regional coordination between EU countries and cooperation with non-EU countries;
-   Capitalizing the available information on the species groups (small toothed cetaceans, deep diving toothed cetaceans and baleen whales) on the basis of the information, already acquired by EU countries throughout the national monitoring programmes;

In accordance with the 2017 Commission Decision on Good Environmental Status (Commission Decision 2017/848), Activity 4 will in particular allow to:

-   further develop and operationalize cetaceans related criteria,
-   support coordinated assessment of Mediterranean cetacean species, including the definition of D1C1, D1C2, D1C4 and D1C5 threshold values,
-   assess and improve the consistency of the determination of GES related to cetacean Species.

Activity 4 is composed of 5 tasks:

➢ Task 4.1: Strengthen regional coordination on cetacean monitoring.
➢ Task 4.2: Proposal for defining a road map to set the threshold values for cetaceans' related criteria.
➢ Task 4.3: Spatial distribution modelling.
➢ Task 4.4: Complementarity of results from different large-scale monitoring platforms.
➢ Task 4.5: Comparison results of different temporal and spatial scale studies.

The five tasks are running in parallel, sharing their progress and results. Task 4.1 focuses on the policy implementation aspects of MSFD cetaceans monitoring (respective national planification, means available, data collection/analysis methods...) with the involvement of relevant experts from the different Mediterranean and Black Sea Member States. Task 4.2 is aimed at deepening the issues related to the definition of the threshold values for criteria D1C1, D1C2, D1C4 and D1C5. Tasks 4.3, 4.4 and 4.5 are aimed at testing different analytical methods, as well as different spatial and temporal scales of datasets. Their results will be useful in the development of guidance for setting threshold values for D1C2, D1C4 and D1C5 cetacean related criteria.

The work carried out during the first year of the project implementation has been dedicated to gathering datasets, expanding the networks of experts/organizations involved in Activity 4, setting up the analytical methods and recruiting external assistance. Regular coordination between Activity 4 partners was ensured to facilitate synergies and complementarities in the analyses to be carried out.

> *Task 4.1: Strengthen regional coordination on cetacean monitoring (lead ACCOBAMS)*

The ABIOMMED Working Group on cetaceans monitoring under MSFD was set up in February 2022. Researchers/managers/experts in charge of the definition/implementation of their country's MSFD cetacean monitoring program were officially appointed by ACCOBAMS Focal Points. It is composed of national experts from EU Mediterranean Countries but considering the ACCOBAMS geographical scope, EU Black Sea Countries were also invited to appoint national experts to promote exchange of experience between the different marine regions.

A Consultant tasked to provide assistance to the Secretariat in the implementation of the Task 4.1, in particular in the coordination of the Working Group activities and preparation of project expected deliverables was recruited in March 2022.

A first online meeting of the Working Group was held on 5 May 2022 and a second one on 16 November 2023. A face-to-face meeting of the Working Group will be held on 14-15 June 2023 in Rome with a view to examine the results of the different tasks of Activity 4 and to prepare common recommendations, in particular on the definition of threshold values. It is also expected that representatives of non-EU Mediterranean countries will participate in this meeting in order to ensure an exchange of information and regional coordination between MSFD and the IMAP process of the Barcelona Convention on cetacean indicators.

> *Task 4.2: Proposal for defining a road map to set the threshold values for cetaceans' related criteria (lead ISPRA)*

ISPRA has started developing a draft roadmap to set threshold values for cetacean-related criteria. This has implied a preparatory work which included analysing relevant documents and organizing bilateral meetings with other project partners.

In particular, in an effort to guarantee consistency in the ABIOMMED approach, an updated summary of methods and approaches used by all EU MS in the Mediterranean region to quantify the selected criteria D1C1 (bycatch), D1C2 (abundance), D1C4 (range of distribution), D1C5 (pattern of distribution: habitat for the species) has been drafted. The reference material considered was the document UNEP/MED WG.514/Inf.11 and all available 2018 MSs reports (https://cdr.eionet.europa.eu/).

A questionnaire was also shared with the members of the ABIOMMED Working Group on cetaceans monitoring under MSFD to collect additional information that will be useful to draft a formal proposal for the definition of threshold values for cetacean-related criteria. A series of subregional or bilateral meeting were organized in February-March 2023 with ABIOMMED Working Group members to complete the questionnaire and review the information provided on each criterion.

> *Task 4.3: Spatial distribution modelling (lead CoNiSMa)*

Different activities aimed to the final purpose to favour the review process of criteria C4 and C5 of Descriptor 1 of EU MSFD were carried on. The basic idea is to involve a wider community of research institutes and units focused on monitoring and researching on cetacean species of the Mediterranean Sea in order to make them participate in this process. In particular, the first step was to collect as much information as possible on the presence and distribution of

the species monitored in the different areas of the Mediterranean to be able to provide a broad and updated picture of the available knowledge.

For this reason, a first technical meeting was organized in January 2022 in which the leaders of the other Tasks of Activity 4 (Task 4.1/4.2/4.4/4.5) were involved, and a series of institutions and research units focused on cetacean monitoring were invited to share their activities and information on their study area. The second step was to probe the willingness to collaborate in the project by sharing data and ideas about the development of spatial distribution models of some species in the basin according to the data available.

Three working groups were created aimed at dedicating themselves to address 3 macro-objectives:

1. a review of the research areas on cetaceans;

2. a review of the methods for analyzing the spatial distribution of species;

3. the realization of case studies that will see the application of different modeling techniques to an enlarge dataset realized by sharing of data by different partners involved.

The large participation of research institutes and organizations involved in the cetacean monitoring obtained in response to the invitations to participate in the meetings of Task 4.3 highlighted the desire and need to collaborate and share data in order to provide a more complete picture of knowledge about cetacean distribution and their suitable habitats in the entire Mediterranean Sea. Therefore, a crucial point is try to analyze data in an integrate mode and to provide a robust information at Mediterranean scale able to support management and conservation action of these species. In particular, it emerged the necessary to integrate data from aerial surveys, which cover large areas leaving out important details as daily/seasonal pattern of migration, behavioral variation in response of environmental and anthropic variables, with the numerous local data available that provide more specific and in-depth information often constant over time. The integration of data at a regional and local scale can, in fact, lead to a more detailed knowledge of the conservation status of cetaceans in the Mediterranean.

Local research activities are therefore, to be considered precious but they are often fragile, in need of support especially economic, to be able to carry out research in the long term, since they are mostly self-financed activities that struggle to survive, even more after the COVID pandemic period. Although data collected from boat (sail, vessel, ferry) surveys requires the need to harmonize information collected with different methodologies and platforms, some basic data (such as effort, position of the sightings, species, and group size) with due attention, can be aggregated and analyzed especially with the aim to model the spatial distribution of species and then contribute to the assessment of criteria 4 and 5 of Descriptor 1.

➢ *Task 4.4: Complementarity of results from different large-scale monitoring platforms (lead EcoOcéan Institut)*

A bibliographic review has been carried out in order to compare the indicators and criteria under different legal frameworks on the thematic of "distribution" equivalent to D1C4 for the MSFD. It includes the Habitat Directive, the UNEP/MAP, OPSAR end HELCOM.

A bibliographic analysis on the main methodologies proposed and used in literature, peer reviewed articles or official EU reports on the subject of D1C4 has been realized. At least twenty methods have been listed, sorted in at least four large categories of approaches, from simple geographic tools to surface density modelling including environmental variables. From those, a SWOT analysis has been conducted in order to highlight the strengths and limits of those methods in the view to answer D1C4. It takes also into account their capacities to answer the criteria in a clear and simple way, their robustness and precision, the type of data needed, etc. The draft SWOT analysis was presented, improved and discussed within a technical meeting with relevant experts in each of the categories of methodology the 25th of May.

> *Task 4.5: Comparison results of different temporal and spatial scale studies (lead Tethys Research Institute)*

The analysis of temporal trends has been performed concerning the pilot area (i.e., the Pelagos Sanctuary) where cetacean long-term data series are available and have been correlated with some environmental (e.g. SST, chlorophyll-a) and anthropogenic predictors. This analysis provides the size of the environmental variability that affects the distribution of these species, and it offers the context to better interpret the results of short-term synoptic surveys. All MSFD descriptors are meant to allow the detection of trends. Therefore, the temporal resolution of monitoring studies is critical, especially when concerning highly mobile species, as they interact with dynamic oceanographic processes that vary at time scales from seconds to decades. Synoptic surveys, aimed to assess abundance of species at the large scale, have generally a short temporal resolution, ranging from days to few weeks, which might be not entirely suitable for detecting trends, especially when distributions are strongly affected by the environmental variability. Within this activity, the spatial and temporal distribution of the studied species, derived from the long time series analysis, was compared with the information provided by the synoptic surveys which have been conducted in the Mediterranean and Black Seas area, and the influence of potential environmental factors which may affect the spatial distribution patterns of the most common species (striped dolphins and fin whales) was investigated The analysis was initially conducted on the Tethys Research Institute dataset, spanning 32 years of dedicated shipboard summer surveys (1990-2021) within the Pelagos Sanctuary and it was later integrated with EcoOceàn dataset (2009-2020) covering a contiguous area. The analysis allowed to conclude that the environmental variability (satellite-derived chlorophyll and SST) may influence the spatial distribution patterns of both species which tend to be more dispersed in conditions of higher primary productivity (i.e. higher annual chlorophyll mean and maximum values) and lower SST.

Such temporal variability of distribution patterns may affect sample sizes of line transects studies and population size estimates deriving from surveys conducted at different times, challenging the possibility of detecting trends. A simulation exercise was in fact conducted, where 1000 randomized sightings were generated over an area of 90,736 km2 – which is approximately the size of the Pelagos Sanctuary – assuming an overall density of 0.011 sightings/km2 and simulating the effect of different dispersions from the distribution centroid (i.e., different median distance between sightings). To simulate the detection of synoptic surveys, line transect strips were created assuming the same half strip width of the Pelagos Sanctuary survey which was 0.8 km. The simulation exercise showed that the distribution patterns may affect the detection probability since the more aggregated the sightings, the lower is the detection probability. This effect should be considered with particular attention in the case of species with low population density over large areas (like with fin whales having a density of 0.001-0.003 sightings/km2 within the Pelagos Sanctuary area), and it may explain the differences in the abundance estimates obtained from the two surveys conducted in the Pelagos Sanctuary in 2009 and 2010 (Panigada et al., 2011, Panigada et al., 2017). In addition, in the last decade, having been more frequent the condition of lower primary productivity and a higher SST, the distribution of both species has been observed as more clumped.

The deliverables from Activity 4 expected by May 2023 are:

- D4.1: Review of the different elements of the MSFD related to cetacean in the EU Mediterranean countries.
- D4.2: Report of the meeting of the Mediterranean working group on cetacean monitoring under MSFD, including recommendations on assessment, GES determination, criteria and thresholds.
- D4.3: Proposals for the definition of threshold values for cetaceans related criteria. D4.4 ± Report on the Spatial distribution modelling and the application of criteria for the assessment of D1C4 and D1C5.
- D4.5: Report on the complementarity of results from different monitoring platforms, airplane, boat and ferry, to answer the MSFD criteria for cetaceans.
- D4.6: Assessment of potential factors of uncertainty on large-scale synoptic surveys assessing distribution and abundance of highly mobile species.