



Deliverable D1.6

**RECOMMENDATIONS AND A ROADMAP FOR
BIODIVERSITY MONITORING AND
ASSESSMENT MID AND LONG TERM ACTION
PLANS IN MEDITERRANEAN MEMBER STATES**

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**Action Plans for Integrated Regional
Monitoring Programmes, Coordinated
Programmes of Measures and Addressing Data
and Knowledge Gaps in Mediterranean Sea**

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CONTENTS

CONTENTS.....	I
EXECUTIVE SUMMARY	2
RECOMMENDATIONS FOR THE BIODIVERSITY ACTION PLANS.....	3
1 INTRODUCTION	3
2 GOALS	4
3 GAPS	4
4 POTENTIAL SOLUTIONS AND OPTIONS.....	4
• Improve data collection and interpretation to improve biodiversity assessments....	4
• Targeting priority species and habitats	5
• Implementation of the Ecosystem Approach principles	5
• Establishment of NETWORKS of Marine Protected Areas in the Mediterranean (from the shore to the high and deep sea).....	6
• Enhance the conservation measures for the Natura 2000 Network in the marine environment.....	6
• Invasive Alien Species	6
• Increase stakeholder involvement and awareness	7
• Need for a coordinating body for Biodiversity research, consultancy and sustainable use in the Mediterranean Sea	7
5 SUMMARY OF MID AND LONG TERM ACTION PLANS ON BIODIVERSITY.....	9

EXECUTIVE SUMMARY

Activity 1 of the ActionMed project aimed to identify the gaps of knowledge and needs in relation to the Initial Assessments, definition of GES, and set the targets with a special focus on biodiversity descriptors and hydrographical conditions (in particular D1, D4, D6 and D7), for which targeted actions should be taken, in order to enable a systematic solution of them at regional level in the Mediterranean. The activity built on the regional level through the involvement of Barcelona Convention, UNEP-MAP monitoring expert groups (CORMONs) and EU level work (especially on ongoing work in the GES and Targets EU Working Group).

Within Activity 1, short term (2015/2016), mid-term (2018) and long-term (beyond 2018) actions developed on how to address the regional gaps in the coming years. The short term actions were implemented as part of the project (i.e. back to back workshops), whereas the mid-term and long-term actions or future proposals and recommendations and a relevant roadmap are presented in this document and are proposals to be implemented by other initiatives and funding sources.

RECOMMENDATIONS FOR THE BIODIVERSITY ACTION PLANS

1 INTRODUCTION

Biodiversity is defined as the collection of genomes, species, and ecosystems occurring in a geographically defined region. The most critical (current or potential) contributors to changes in marine biodiversity are now recognized to be the following: fishing and removal of the ocean's animal and plant stocks, many of which are overexploited; chemical pollution and eutrophication; physical alterations to coastal habitat; invasions of exotic species; and global climate change, including ocean acidification, increased ultraviolet radiation and potentially rising temperatures, resulting in possible changes to ocean circulation (and thus nutrient supply and distribution). These sources of stress to the marine environment have affected and may yet affect life from the intertidal zone to the deep sea (National Research Council US, 1995).

In the framework of the MSFD implementation in the Mediterranean region it is necessary to assess the environmental status of marine areas using well defined methodological criteria. In order to decide if a marine area is in Good Environmental Status (GES), it is necessary to establish threshold values, wherever possible, and agree on key methodological principles, as much as possible on a regional level, to be able to distinguish between Good and not Good environmental conditions in a coordinated and coherent manner.

There are still many open questions in relation to biodiversity monitoring and assessment, many of them specifically mentioned in the ActionMed Deliverables D1.3 (Final Report on MSFD biodiversity descriptors/indicators for the Mediterranean - A comparison of targets and associated indicators & Proposal of a common set of biodiversity indicators for the Mediterranean Sea'). Following the joint work in Activity 1 of the ActionMed project, the scientific group delivered the following points reflecting the key recommendations for the Action Plans for Biodiversity in the Mediterranean.

2 GOALS

- Conserve biodiversity through targeted actions for species and habitats following a holistic approach.
- Develop an efficient management framework
- Increase awareness and ensure dissemination of knowledge on biodiversity to all policy makers and stakeholders

3 GAPS

- There are not common methodological approaches for biodiversity assessment
- There is no uniform underwater mapping of the shallow (<50 m depth) coastal areas
- MSs do not report on all the biodiversity criteria and indicators, thus leading to a high level of incoherence and reduced comparability, at all levels of the information flow: from sampling to the interpretation of the results.
- The level of integration with other EU legislations (i.e. Habitats & Water Framework Directives) is relatively low.
- The regional cooperation is not satisfactory.
- National monitoring areas and sub-areas present a large internal heterogeneity in abiotic drivers and species distribution. As a consequence, it is difficult and often not appropriate to select common thresholds for impact level.
- A plethora of international, regional and national legislation on the sea, as well as authorities at national, regional and local levels, at the times unevenly distributed in the MSs, which aggravate the implementation of a coherent policy and overall management of the marine environment.
- Lack of communication between researchers and environmental managers

4 POTENTIAL SOLUTIONS AND OPTIONS

- **Improve data collection and interpretation to improve biodiversity assessments**

Broad scale data on the spatial distribution (scale < 1:50.000) of priority biodiversity elements (habitats, species) in the Mediterranean are difficult to obtain. European projects, such as EUSeaMap or MedSea Checkpoint have produced broad-scale habitat maps for almost all the Mediterranean subregions. At the moment, these maps are constructed on a rough scale, but it is a good start for more realistic biodiversity assessments. These modelled maps could be validated or groundtruthed by using indicators assessment results from point stations and pressure data.

Anthropogenic pressures have not been thoroughly mapped in the Mediterranean, however datasets of different human activities or pressures are available. Anthropogenic pressures, at least the predominant ones or those affecting specific biodiversity elements, can be mapped and provide a basis for setting environmental

targets i.e. the localized reduction in pressure that is required to achieve GES. Mapping where the pressures occur in relation to the affected biodiversity element, is also important for management issues.

Advances in science- and nature-based metrics are needed to summarize and interpret environmental information using current standards from other EU legislation (e.g. CFP, WFD, Habitats & MSP directives) as minimum requirements and also develop more practical and reliable generation of environmental quality criteria/indicators.

- **Targeting priority species and habitats**

Prioritise biodiversity indicators applied on biological components that reflect the impact of human activities to the environment.

A reference list of species and habitats is proposed for the Mediterranean (ActionMed deliverable D1.4 “Manual for strategies for ongoing assessment of biodiversity indicators in the Mediterranean”) on the basis of their sensitivity to human pressures, or representing functional group of species, or providing a habitat for other species. This is aiming to improve the comparability of assessment and facilitate cooperation in monitoring between countries sharing a (sub) region.

The UNEP/MAP Decision IG. 22/7 on Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (COP 19, Athens, 2016), has specific provisions for the monitoring and assessment of biodiversity related indicators (Common Indicators 1-5) and includes a reference list of species and habitats to be monitored in its Appendix 1.

- **Implementation of the Ecosystem Approach principles**

A key principle for the biodiversity conservation is the Ecosystem Approach, defined by the Convention on Biological Diversity as a strategy for the integrated management of land, air, water and living resources. The EcAp promotes conservation and sustainable use in an equitable way and recognises that people with their cultural and varied social needs, are an integral part of ecosystems.

All European riparian countries as well as the EU are Contracting Parties to the Barcelona Convention, under which they implement the ecosystem approach process, confirmed and renewed in COP Decisions IG. 17/6; IG. 20/4; IG.21/3; IG. 22/7.

The implementation of this ecosystem approach process implies undertaking 7 key steps, including definition of Ecological and Operational Objectives, Targets, Indicators and Good Environmental Status for the specific indicators. The Contracting Parties are currently undertaking one of the final steps of this process, in the form of implementing the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (Decision IG.22/7).

In addition, all the main marine policy frameworks in Europe have adopted an Ecosystem Approach to Fishery (EAF), for managing and conserving the environment and natural resources. The ecosystem approach is about the conservation of ecosystem integrity, including all the different structural components and their functioning. Application of the ecosystem approach to (sub) regional assessments will help to support an integrated marine and coastal area management and spatial planning.

- **Establishment of NETWORKS of Marine Protected Areas in the Mediterranean (from the shore to the high and deep sea)**

The marine conservation throughout the Mediterranean is still constrained by heterogeneities in the region's governance, institutional structures, wealth distribution, social capital, and the knowledge environment. Most of the areas under protection are rather small coastal reserves and not *a priori* intended to be ecologically linked and, thus, allow the building of effective networks. Apart from the ecological connectivity, another important issue of networking MPAs is the enhancement of protection measures. It is clear that the management effectiveness of Mediterranean Marine Protected Areas has to be improved.

Recent studies focus on the ecological coherence and connectivity between MPAs, however the information gained from these studies has to be integrated to the measures improving the protection strategies by involving holistic approaches of conservation.

Networks of MPAs are recognized by most countries and regions in the world as an important tool for biodiversity and ecosystem conservation. It is expected that networking MPAs in the Mediterranean will enhance at a larger scale their protection and management, building on ecosystem-based management tools for biodiversity conservation and maintenance of ecosystem goods and services.

The Contracting Parties to the Barcelona Convention adopted in their COP 19 (Athens, 2016) a Roadmap for a Comprehensive Coherent Network of Well-Managed MPAs to Achieve Aichi Target 11 in the Mediterranean (Decision IG. 22/13). The roadmap sets out specific actions and timetable for the achievement of four objectives including (1) strengthening of networks of protected areas at national and Mediterranean levels, including in the high seas and in ABNJ (Areas Beyond National Jurisdiction), as a contribution to the relevant globally agreed goals and targets; (2) Improvement of the network of Mediterranean MPAs through effective and equitable management; (3) Promotion of sharing of environmental and socio-economic benefits of Mediterranean MPAs, and MPAs integration into the broader context of sustainable use of the marine environment and the implementation of the ecosystem and marine spatial planning approaches. (4) Ensuring stability of the network of Mediterranean MPAs by enhancing their financial sustainability.

- **Enhance the conservation measures for the Natura 2000 Network in the marine environment**

The conservation measures within Natura 2000 have often been proven insufficient due to coordination issues, to the lack of funding and to the lack of integrated coastal zone management. Natura 2000 network should be part of the wider network of protected areas. The provision of adequate financing for the conservation measures required for Natura 2000 marine sites at both national and regional level is expected to improve biodiversity conservation.

- **Invasive Alien Species**

Invasive non-native species can have serious and damaging effects on biodiversity and ecosystem services. Remarkably dynamic invasive species may alter biodiversity and ecosystem functioning (e.g. the Lionfish *Pterois miles*, *Caulerpa etc.*). A non-native

species strategy should be planned and implemented in the Mediterranean building on prevention, detection and long term control of invasive species to take forward the CBD principles.

The Contracting Parties to the Barcelona Convention adopted in their COP 19 (Athens, Greece) an Updated Action Plan concerning Species Introductions and Invasive Species in the Mediterranean Sea (Decision IG. 22/12). The Action Plan aims at preventing as appropriate, minimizing and limiting, monitoring, and controlling marine biological invasions and their impacts on biodiversity, human health, and ecosystem services.

- **Increase stakeholder involvement and awareness**

Develop strategies on key principles to involve key stakeholders and implementing step-by-step actions for stakeholder identification, their engagement and their participation in the design of biodiversity conservation actions.

- **Need for a coordinating body for Biodiversity research, consultancy and sustainable use in the Mediterranean Sea**

The seascape of the important players on the sustainable use and exploitation in the Mediterranean seems to be fragmented across many levels of the geopolitical administration: from local and national to international bodies, among which there exists only little coordination and collaborative effort. Local, regional (within countries) and national authorities in the northern countries deal with the implementation of the EU Directives, relevant to the biodiversity sustainable exploitation, whereas in the southern ones the same authorities deal with the state's Acts and Laws.

At the international levels, EU authorities and the Barcelona Convention take the lead, with many organizations to be kept involved in synergies on the field of the sustainable use of the marine biodiversity such as CIESM (<http://www.ciesm.org/about/index.htm>), FAO (<http://www.fao.org/home/en/>), GFCM (<http://www.gfcm.org/gfcm/about/en>), next to UNEP (and UNEP/MAP) (<http://www.unep.org/> and <http://www.unepmap.org>), to mention just a few. Each of these international, regional organizations have their own mission and mandate and defines the field of its action, accordingly.

Between the various bodies, which deal with marine biodiversity, it is not easy to coordinate actions on the implementation of the international, regional and national legislation and planning. The Biodiversity experts in the ActionMed project suggested that there is a key need for one regional organization with clear specific mission on the coordination of the scientific knowledge, to support through its consultancy the implementation of the relevant legislation on marine biodiversity use to the Mediterranean Sea. From a scientific point of view, an ideal model for such an organization would be that of the ICES (<http://www.ices.dk/explore-us/who-we-are/Pages/Who-we-are.aspx>), with a clear vision and implementation plan on the field, backed up by the Convention on the Biological Diversity and the Barcelona Convention, and with signatory countries to shoulder responsibility for its development, functioning and performance, including funding.

The availability, accessibility and visualization (possibly via GIS Tools) of large environmental dataset is crucial to define monitoring strategies and to interpret their output. Data portal and virtual research environment (e.g. EMODnet, LifeWatch-ERIC)

may have pivotal role in the collection, organization and diffusion of environmental data and analytical methodologies. They could constitute a fundamental support for the design of advanced monitoring plans and for the interpretation of the collected data. Integration of European Research Infrastructures (e.g., LifeWatch-ERIC) in the implementation of European Directives, as MFSD, is of particular relevance to reinforce the EU policy towards a wise and efficient process of ensuring ecosystem health at the EU scale.

Strengthening of UNEP/MAP Specially Protected Areas Regional Activity Centre (SPA/RAC), the specific objective of which is to contribute to the protection and preservation and sustainable management of marine and coastal areas of particular natural and cultural value and threatened and endangered species of flora and fauna, could be envisioned in this respect.

The main points and key recommendations presented above regarding the Mid and Long term Action Plans on Biodiversity issues in the Mediterranean, as well as a roadmap for their implementation and the stakeholders to be evolved are summarized in the Table below

5 SUMMARY OF MID AND LONG TERM ACTION PLANS ON BIODIVERSITY

	Objectives	Gaps	Actions	Timeline	Level *	Stakeholders
Biodiversity action plans	Conserve biodiversity through targeted actions for species and habitats following a holistic approach	<p>There are not common methodological approaches for biodiversity assessment</p> <p>There is no uniform underwater mapping of the shallow (<50 m depth) coastal areas</p> <p>MSs do not report on all the biodiversity criteria and indicators thus leading to a high level of incoherence and reduced comparability, at all levels of the information flow: from sampling to the interpretation of the results</p>	<p>Improve data collection and interpretation to improve biodiversity assessments</p> <p>Targeting priority species and habitats</p> <p>Implementation of the Ecosystem Approach principles</p>	Medium term	Regional	EU MS biodiversity experts, UNEP/MAP, GFCM, ACCOBAMS
			<p>Minimizing and limiting, monitoring, and controlling</p>	Long Term	Regional	EU MS biodiversity experts,

		National monitoring areas and sub-areas present a large internal heterogeneity in abiotic drivers and species distribution. As a consequence, it is difficult and often not appropriate to select common thresholds for impact level.	marine biological invasions and their impacts on biodiversity, human health, and ecosystem services. Establishment of NETWORKS of Marine Protected Areas in the Mediterranean (from the shore to the high and deep sea)			UNEP/MAP, Managers of MPAs, ACCOBAMS
Develop an efficient management framework	The regional cooperation is not satisfactory.	Lack of communication between researchers and environmental managers The level of integration with other EU legislations (i.e. Habitats & Water Framework Directives) is relatively low.	Increase awareness and ensure knowledge on biodiversity to policy makers and stakeholders Enhance coordination between MSFD and UNEP/MAP	Medium term	Regional	MS experts, UNEP/MAP
	Regional				MS experts, UNEP/MAP	
	Regional				MS experts, UNEP/MAP	

		A plethora of international, regional and national legislation on the sea, as well as authorities at national, regional and local levels, at the times unevenly distributed in the MSs, which aggravate the implementation of a coherent policy and overall management of the marine environment.				
			Enhance the conservation measures for the Natura 2000 Network in the marine environment	Medium – Long term	Regional	MS experts, Managers of MPAs, UNEP/MAP
			Need for a coordinating body for Biodiversity research, consultancy and sustainable use in the Mediterranean Sea			

