



United Nations Environment Programme



UNEP(DEPI)/MED WG.382/15
11 June 2013

ENGLISH
ORIGINAL: ENGLISH



MEDITERRANEAN ACTION PLAN

Eleventh Meeting of Focal Points for SPAs

Rabat, Morocco, 2-5 July 2013

**Proposed GES and Targets regarding Ecological Objectives on biodiversity and fisheries
(Joint session of the Eleventh Meeting of Focal Points for SPAs
and COR-GEST on Biodiversity & Fisheries)**

Delegates are kindly requested to bring their documents to the meeting

UNEP/MAP
Athens, 2013

Note:

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**Provisional GES description and targets for the following Ecological Objectives (EO)
in the framework of the Ecosystem Approach:**

**EO 1(Biodiversity), EO 2(Non-indigenous species), EO 3 (Harvest of commercially
exploited fish and shellfish), EO 4 (Marine food webs) and EO 6 (Sea-floor integrity)**

1. Introduction

The Contracting Parties to the Barcelona Convention adopted during their 15th Ordinary Meeting (Almeria, Spain, 2008) a roadmap made of 7 steps for the application of the Ecosystem Approach in the management of human activities in the Mediterranean.

In this context they adopted¹ during their Ordinary meeting, held in Paris in February 2012, 11 Mediterranean Ecological Objectives (Eos) associated with Operational Objectives and Indicators (Annex 1 to this document). The Meeting requested the Secretariat to work during the biennium 2012-2013 on the determination, for each EO, of Mediterranean Good Environmental Status (GES) and targets, through a participatory process involving MAP components, Contracting Parties and scientific community with the view of submitting the proposed Mediterranean GES and targets to the next meeting of the Contracting Parties.

They also decided to establish an EcAp Coordination Group consisting of MAP Focal Points, the Coordinating Unit, the MAP components and MAP partners to monitor and provide guidance for the process of implementing the remaining steps in the roadmap. The Coordination Group held its First Meeting in Athens on 29-30 May 2012. The Meeting provided guidance regarding the methodological approach to be followed by the three clusters: (i) Pollution Cluster (EOs 5, 9, 10, 11), (ii) Biodiversity and Fisheries Cluster (EOs 1, 2, 3, 4, 6) and (iii) Integrated Coastal Zone Management (ICZM) and Hydrologic Conditions Cluster (EOs 7 and 8).

A first meeting of the Biodiversity and Fisheries Cluster of the Correspondence Group on GES and Targets was organised in Rome (Italy) on 7-8 February 2013 in collaboration with the Secretariat of the General Fisheries Commission for the Mediterranean (GFCM). The Meeting discussed methodologies and approaches for setting targets and elaborated draft GES descriptions and corresponding targets for the Ecological Objectives on biodiversity and fisheries. The outcomes of the Meeting were then reviewed by the Second Meeting of the EcAp Coordination Group, held in Athens (Greece) on 24 April 2013. While appreciating the progress made in the elaboration of GES descriptions and targets, the EcAp CG recommended to have further consultations regarding the EOs related to Biodiversity and Fisheries and supported the idea to have these consultations in combination with the next Meeting of the FPs for SPA. The process is expected to be technically completed before the MAP FPs meeting in September 2013.

This document is aimed at providing a working basis for the Eleventh Meeting of the Focal Points for SPA whose works under its Agenda item on the EcAp process will be also attended by members of the Biodiversity and Fisheries Cluster. It includes the approved provisional GES descriptions and targets related to the Ecological Objectives 1 (Biodiversity), 2 (Non-indigenous species), 3 (Harvest of commercially exploited fish and shellfish), 4 (Food webs), 6 (Sea-floor integrity). It includes also proposals regarding the reference lists of habitat and species to be considered in the determination of the

¹ (Decision 20/4 "Implementing MAP ecosystem approach roadmap: Mediterranean Ecological and Operational Objectives, Indicators and Timetable for implementing the ecosystem approach roadmap").

GES regarding these EOs. The meeting will be invited to review the approved provisional GES descriptions and targets and to make recommendations as for the reference lists of habitats and species as well as for the geographical scope of the assessments.

2. Provisional GES descriptions and targets elaborated by the Biodiversity and Fisheries cluster and reviewed by the Second meeting of the EcAp Coordination Group

2.1 GES description and targets with regard to Ecological Objective 1 (Biodiversity)

The ECAP Coordination Group during its first meeting (Athens, May 2012) stressed that the complexity of the biodiversity components makes very difficult their assessment at all levels and in all areas. Furthermore, considering that in comparison with pollution there is not so much monitoring derived information on biodiversity, it recommended that, for biodiversity, targets be addressed to specific endangered or threatened species and priority habitats for the functionality of the Mediterranean, with a combination of qualitative and quantitative targets. It also recommended that the species listed in Annex II and III of the SPA/BD be used as the basis for the selection of a list of indicator species. Based on these recommendations of the Coordination Group and the relevant provisions of Decision 20/4 regarding the species and habitats to be considered for the Ecological Objective 1 (Biodiversity), the Biodiversity and Fisheries cluster agreed that the biodiversity assessments for the determination of GES and targets be made for:

- Three species groups (Marine mammals, Birds and reptiles) selected from the Annex II to the SPA/BD Protocol. No species from Annex III to the SPA/BD Protocol will be considered, since these species are considered for the determination of GES and targets under Ecological Objective 3 (Harvest of commercially exploited fish and shellfish).
- A list of habitats that achieves representativeness across broad categories of habitat types.

The four following tables show the proposed GES description and targets for the operational objectives and related indicators under EO1 (Biodiversity). The two first columns show the Operational objectives and Indicators as already adopted by the Contracting Parties. These were not amended by the cluster, although it considered that some of them are not necessarily relevant.

Proposed GES description and targets for Key coastal and marine habitats

Operational objective	Indicator	Proposed GES Description	Proposed Targets
1.4 Key coastal and marine habitats are not being lost	1.4.1 Potential/observed distributional range of certain coastal	The habitat is present in all its potential ² distributional range. ³	State The ratio Potential / observed distributional range tends to 1 ⁴

² For the purpose of this GES Description, the potential distribution range of the habitat is the historically known distribution of the habitat in the Mediterranean

³ This is not realistic for many habitats, given their slow natural expansion rate.

⁴ The Secretariat received a comment from one Party stressing that this is almost impossible to achieve for some habitats like Posidonia beds or coraligenous. Indeed, in many cases we do not have models to predict the potential distribution of these habitats.

	and marine habitats listed under SPA protocol		Pressure Decrease in the main human causes of the habitat decline
	1.4.2 Distributional pattern of certain coastal and marine habitats listed under SPA protocol	The distributional pattern is in line with prevailing physiographic, hydrographic, geographic and climatic conditions.	State Zero net human induced loss of habitat ⁵
	1.4.3 Condition of the habitat-defining species and communities	The population size and density of the habitat-defining species are within reference conditions ensuring the long term maintenance of the Habitat	State No human induced significant deviation of population abundance and density from reference conditions ⁶ The species shows a positive trends in population abundance and density (for recovering habitats)

The Focal Points for SPA and the members of the Biodiversity and Fisheries Cluster will be invited to (i) consider the proposed GES descriptions and targets, (ii) to identify the Habitats to be considered and (iii) to propose the geographical scale according to which the determination of GES and related targets will be carried out for each of the selected habitats.

Habitats to be considered: The Contracting Parties to the Barcelona Convention adopted a Reference List of Marine Habitat Types for the Selection of Sites to be included in the National Inventories of Natural Sites of Conservation Interest. Decision 20/4 stipulates that sufficient information exists to make a prioritization amongst the benthic habitats mentioned in the Reference List and the priority habitats in areas beyond national jurisdiction following CBD decisions VIII/24 and VIII/21 paragraph 1.

As stated in Decision 20/4 a list of indicator habitats could include (from shallow to deep): biocoenosis of infralittoral algae (facies with vermetids or trottoir), hard beds associated with photophilic algae, meadows of the sea grass *Posidonia oceanica*, hard beds associated with Coralligenous biocenosis and semi dark caves, biocoenosis of shelf-edge detritic bottoms (facies with *Leptometra phalangium*), biocoenosis of deep-sea corals, seeps and biocoenosis of bathyal muds (facies with *Isidella elongata*). In addition to these habitats, the marine vegetal assemblages listed as natural monuments by the Marine Vegetation Action Plan⁷

⁵ The Secretariat received a comment from one Party proposing the following alternative wording "Habitat distributional pattern of coastal and marine habitats established under SPA protocol is stable or increasing, and not smaller than baseline value, established as the current distribution". If the baseline value is established as a previous known distribution, which is wider than the present, a more ambitious target could be proposed: "Habitat distributional pattern of coastal and marine habitats established under SPA protocol is stable or increasing (where feasible) towards the baseline value".

⁶ Reference conditions should be defined for the habitats to be considered under EO1

⁷ The Action Plan for the conservation of marine vegetation in the Mediterranean Sea has been adopted by the Eleventh Ordinary meeting of the Contracting Parties to the Barcelona Convention and its Protocols (Malta, 27-30 October 1999).

could be considered: Barrier reefs of Posidonia, organogenic surface formations, terraces (platforms with vermitids covered by soft algae) and certain Cystoseira belts. The Biodiversity and Fisheries Cluster of the ECAP Correspondence Group will review the list of indicator habitat taking into account the relevance of each selected habitat as well as the cost of monitoring techniques and effort for their assessment. The cluster members will have also to identify indicator habitats amongst pelagic habitats such as upwelling areas, fronts and gyres.

Availability of Data: The availability (and quality) of data varies from one habitat to another.

Geographical Scale: The assessments should be made at national level and used to compile regional assessments.

Proposed GES description and targets for Marine Mammals:

Operational objective	Indicator	Proposed GES Description	Proposed Targets
1.1 Species distribution is maintained	1.1.1 Distributional range	<p><u>Cetaceans:</u> The species continues to occur in all Mediterranean areas where formerly known.</p> <p><u>Monk Seal:</u> Monk Seal is present along all Mediterranean coasts with suitable habitats for the species.</p>	<p>State <u>Cetaceans:</u> Cetacean distribution is not significantly affected by human activities</p> <p><u>Monk Seal:</u> The distribution of Monk Seal remains stable or expanding and the species is recolonizing areas with suitable habitats.</p> <p>Pressure/Response: Human activities⁸ having the potential to exclude marine mammals from their range area are regulated and controlled.</p> <p>Conservation measures implemented for the zones of importance for cetaceans</p> <p>Fisheries management measures that strongly mitigate the risk of incidental taking of monk seals and cetaceans during fishing operations are implemented.</p>
	1.1.2 Area covered by the species (for sessile/benthic species)		

⁸ Seismic surveys, marine noise generating activities, fishing, maritime traffic, etc.

1.2 Population size of selected species is maintained	1.2.1 Population abundance	The population size allows to achieve and maintain a favourable conservation status ⁹	State No human induced decrease in population abundance
	1.2.2 Population density	<u>Cetaceans:</u> N/A <u>Monk Seal:</u> Number of individuals by colony allows to achieve and maintain a favourable conservation status ¹⁰	State Continual recovery of population density
1.3 Population condition of selected species is maintained	1.3.1 Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/ mortality rates)	<u>Cetaceans:</u> Species populations are in good condition: Low by-catch induced mortality ¹¹ , balanced sex ratio and no decline in calf production <u>Monk Seal:</u> Species populations are in good condition: Low human induced mortality, appropriate pupping seasonality, high annual pup production, balanced reproductive rate and sex ratio	State (Quantitative targets may be set if baseline data on the extent of incidental catch and the population size will be available) Pressure/Response <u>Cetaceans:</u> Appropriate measure implemented to mitigate incidental catch, prey depletion and other human induced mortality <u>Monk Seal:</u> Appropriate measures implemented to mitigate direct killing and incidental catches and to preclude habitat destruction.
1.4 Key coastal and marine habitats are not being lost	1.4.1 Potential / observed distributional range of certain coastal and marine habitats listed under SPA protocol		

⁹ For cetaceans, the ACCOBAMS/IUCN evaluation should be considered

¹⁰ To be applied at local level and not at national scale

¹¹ Baseline data are required.

	1.4.2 Distributonal pattern of certain coastal and marine habitats listed under SPA protocol		
	1.4.3 Condition of the habitat- defining species and communities		

The Focal Points for SPA and the members of the Biodiversity and Fisheries Cluster will be invited to (i) consider the proposed GES descriptions and targets, (ii) to identify the species to be considered¹² and (iii) to propose the geographical scale according to which the determination of GES and related targets will be carried out for each of the selected species.

Marine mammal Species to be considered (in alphabetical order):

Twenty four species of cetaceans occur in the Mediterranean Sea. However, only eleven cetacean species are represented by regularly occurring, resident populations: fin whales, sperm whales, Cuvier's beaked whales, orcas (limited to a small population found in the Strait of Gibraltar), long-finned pilot whales, Risso's dolphins, rough-toothed dolphins, common bottlenose dolphins, striped dolphins, short-beaked common dolphins, and harbour porpoises (limited to portions of the Northern Aegean Sea). All these regular species will be considered for the determination of GES. The Mediterranean Monk Seal is another marine mammal species occurring in the Mediterranean, it is one of the rarest marine mammals in the world. Its population is very sparse and made of individuals scattered throughout a wide distribution range. The species qualifies as Critically Endangered according to the IUCN criteria.

Availability of Data: Due to a limited availability of data about cetacean population size and distribution, the Scientific Committee of ACCOBAMS recommended that a synoptic survey be carried in the Mediterranean Sea. The survey will provide baseline information that can be used for the evaluation of population status and GES. For Monk Seal, information and data are available for the main colonies.

Geographical Scale: For cetaceans the assessments should be made at the Mediterranean level. For the Monk seal assessments should be made at national and Mediterranean scale.

¹² The EcAp Coordination Group recommended that a very limited number of species should be considered

Proposed GES description and targets for Birds:

Operational objective	Indicator	Proposed GES Description	Proposed Targets
1.1 Species distribution is maintained	1.1.1 Distributional range	The species continues to occur in all Mediterranean areas where formerly known, [non-significant shrinkage or shift in the Mediterranean species distribution range]	State No significant shrinkage in the population distribution in the Mediterranean in all [90% of the] indicator species, and for colonial-breeding seabirds (ie, most species in the Mediterranean): New colonies are established and the population is encouraged to spread among several alternative breeding sites ¹³ .
	1.1.2 Area covered by the species (for sessile/benthic species)		
1.2 Population size of selected species is maintained	1.2.1 Population abundance	The absolute number of individuals that compose the population allows to achieve and maintain a favourable conservation status [The species population has abundance levels allowing to qualify to Least Concern Category of IUCN.] ¹⁴	No [human induced] decrease in population abundance. The total number of individuals is sparse enough in different spots to allow adequate resilience.
	1.2.2 Population density	Population density allows to achieve and maintain a favourable conservation status	State Continual recovery of population density in enough different spots to allow resilience No decrease in population density in new/ recolonized critical habitat (for recovered populations)

¹³ This is recommended by the conservation plans of some taxa (Audouin's G, Lesser-crested T)

¹⁴ A taxon is Least Concern when it has been evaluated and does not qualify for "Critically Endangered", "Endangered", "Vulnerable" or "Near Threatened"

<p>1.3 Population condition of selected species is maintained</p>	<p>1.3.1 Population demographic characteristics (e.g. body size or age class structure, sex ratio, fecundity rates, survival/ mortality rates)</p>	<p>Species populations are in good conditions: Appropriate levels of breeding success & acceptable levels of survival of young and adult birds, incidental catch mortality is at negligible levels, particularly for species with IUCN threatened status.</p>	<p>Population models point to long-term maintenance of populations of all taxa, particularly those with IUCN threatened status</p>
<p>1.4 Key coastal and marine habitats are not being lost</p>	<p>1.4.1 Potential / observed distributional range of certain coastal and marine habitats listed under SPA protocol</p>		
	<p>1.4.2 Distributional pattern of certain coastal and marine habitats listed under SPA protocol</p>		
	<p>1.4.3 Condition of the habitat-defining species and communities</p>		

The Focal Points for SPA and the members of the Biodiversity and Fisheries Cluster will be invited to (i) consider the proposed GES descriptions and targets, (ii) to identify the species to be considered¹⁵ and (iii) to propose the geographical scale according to which the determination of GES and related targets will be carried out for each of the selected species.

Bird species to be considered: The List of Endangered or Threatened Species annexed to the SPA/BD Protocol (Annex 2) include thirty bird species. From practical and feasibility point of view, it would be difficult to consider all these species for the assessment of GES. It is therefore recommended to select a set of indicator species taking into account ecological parameters (e.g: trophic level, current conservation status, existence of known significant threats in the range area or in areas of special importance for the species, availability of data and feasibility of monitoring for data collection etc.) . Considering these criteria the following bird species are proposed to be considered determination of GES and targets under EO1 (in alphabetical order):

Calonectris diomedea (Scopoli, 1769), Cory's Shearwater
Chroicocephalus genei (Breme, 1839), Slender-billed Gull
Puffinus mauretanicus (Lowe, PR, 1921), Balearic Shearwater
Sterna bengalensis (Lesson, 1831), Lesser Crested Tern
Sterna nilotica (Gmelin, JF, 1789), Gull-billed Tern

¹⁵ The EcAp Coordination Group recommended that a very limited number of species should be considered

Availability of Data: The availability of data about bird populations is considered as good for most of the endangered species. Several high quality databases exist, most of them are updated on a regularly basis.

Geographical Scale: For Birds the assessments should be made at national and Mediterranean level.

Proposed GES description and targets for Reptiles:

Operational objective	Indicator	Proposed GES Description	Proposed Targets
1.1 Species distribution is maintained	1.1.1 Distributional range	The species continues to occur in all Mediterranean areas where formerly known, including nesting, mating, feeding and wintering sites.	<p>State Turtle distribution is not significantly affected by human activities</p> <p>Turtles continue to nest in all known nesting sites</p> <p>Pressure/Response Protection of nesting turtle nesting sites.</p> <p>Human activities¹⁶ having the potential to exclude marine turtles from their range area are regulated and controlled.</p>
	1.1.2 Area covered by the species (for sessile/benthic species)		
1.2 Population size of selected species is maintained	1.2.1 Population abundance	The population size allows to achieve and maintain a favourable conservation status	<p>State No human induced decrease in population abundance</p>
	1.2.2 Population density	N/A for Mediterranean marine turtles	N/A for Mediterranean marine turtles
1.3 Population condition of selected species is maintained	1.3.1 Population demographic characteristics (e.g. body size or age class structure, sex ratio,	Low mortality induced by incidental catch ¹⁷ ,	<p>Pressure Measures to mitigate incidental catches in turtles implemented</p>

¹⁶ Unctrolled use of turtle nesting sites, fishing, maritime traffic, etc.

¹⁷ Baseline data are required.

	fecundity rates, survival/ mortality rates)	Favourable sex ratio and no decline in hatching rates	
1.4 Key coastal and marine habitats are not being lost	1.4.1 Potential / observed distributional range of certain coastal and marine habitats listed under SPA protocol		
	1.4.2 Distributional pattern of certain coastal and marine habitats listed under SPA protocol	Stable or increasing distribution of nesting sites	The species recovers historical nesting sites ¹⁸
	1.4.3 Condition of the habitat-defining species and communities		

The Focal Points for SPA and the members of the Biodiversity and Fisheries Cluster will be invited to (i) consider the proposed GES descriptions and targets, (ii) to identify the species to be considered and (iii) to propose the geographical scale according to which the determination of GES and related targets will be carried out for each of the selected species.

Turtle species to be considered: Five turtle species are listed as Endangered or Threatened Species in the Mediterranean (Annexe 2 to the SPA/BD Protocol). Only two of them (*Caretta caretta* and *Chelonia mydas*) are common and nest along the Mediterranean Coasts. Most of the monitoring effort is focusing on these two species that could be considered as good representative species of marine reptiles in the Mediterranean.

Availability of Data: Most of the nesting areas of *Caretta caretta* and *Chelonia mydas* are covered by annual monitoring programmes that provide valuable data about nesting activity and estimates of hatching rates. Some of these monitoring programmes include also tagging of nesting females. There is however a lack of information concerning population size and human induced mortality of juveniles and adults (bycatch) since the available data on these parameters are scarce and limited to few areas.

Geographical Scale: The assessments should be made at national and Mediterranean scales for nesting activity and at Mediterranean level for the population size and condition.

¹⁸ The Secretariat received a comment from one Party proposing the following alternative wording: "The species recovers historical nesting sites, where feasible"

2.2 GES description and targets with regard to to Ecological Objective 2 (Non-indigenous species)

The occurrence of non-indigenous species (NIS) into the Mediterranean Sea is an increasing phenomenon involving intentional and non-intentional sources of introduction. The vectors of species introduction into the Mediterranean waters include ballast waters, aquaculture and trade in live marine organisms. However, the entry of organisms through the Suez Canal is recognised as the most important entry vector. The establishment of non-indigenous species in the eastern part of the Mediterranean is generating a deep change in the species composition of the Eastern Basin marine ecosystems. Some NIS have become valuable fisheries resources, but many proved to be invasive and caused significant damages to local species populations and assemblages. Furthermore, several examples of impacts on human health and/or economic losses caused by invasive species have been described in Mediterranean coastal waters.

Climate change may create conditions which are more suitable for NIS to survive, establish viable populations and spread widely.

Proposed GES description and targets for Ecological Objective 2 (Non-indigenous species):

Operational objective	Indicator	Proposed GES Description	Proposed Targets
2.1 Invasive non-indigenous species introductions are minimized	2.1.1. Spatial distribution, origin and population status (established vs. vagrant) of non-indigenous species	Minimised risk of introduction and spread of NIS linked to human activities, in particular for potential IAS	<p><u>State</u> The abundance of IAS introduced as a result of human activities is reduced.</p> <p><u>Pressure/Response</u></p> <ul style="list-style-type: none"> – Improved management of the main human related pathways and vectors of NIS introduction (Mediterranean Strategy for the management of ballast waters, early warning systems, etc.) – Action plans developed to address high risk NIS, should they appear in the Mediterranean.
	2.1.2 Trends in the abundance of introduced species, notably in risk areas	Decreasing abundance of introduced NIS in risk areas	<p><u>State</u> Abundance of NIS introduced by human activities is reduced at levels with no detectable impact zero</p>

Operational objective	Indicator	Proposed GES Description	Proposed Targets
2.2. The impact of non-indigenous particularly invasive species on ecosystems is limited	2.2.1 Ecosystem impacts of particularly invasive species	No decrease in native species abundance, no decline of habitats and no change in community structure that have been generated by IAS via competition, predation or any other direct or indirect effect.	<u>Pressure/Response</u> Impacts of NIS reduced to the feasible minimum
	2.2.2 Ratio between non-indigenous invasive species and native species in some well-studied taxonomic groups	Stable or decreasing rate of NIS	<u>State</u> To be set upon species choice and their related impact degree of the invasive upon the indigenous ones, taking into account the role of Climate Change in accelerating the establishment of NIS populations.

The Focal Points for SPA and the members of the Biodiversity and Fisheries Cluster will be invited to (i) consider the proposed GES descriptions and targets, (ii) to identify the species to be considered and (iii) to propose the geographical scale according to which the determination of GES and related targets will be carried out for EO2 (Non-indigenous species).

Species to be considered:

Considering that not all the non-indigenous species have the potential to establish viable populations in the Mediterranean Sea, only those species having established viable populations threatening ecosystems, habitats or species will be considered for the determination of GES in relation to EO2. Such species are known under the Convention on Biological Diversity as Invasive Alien Species (IAS).

The target 9, adopted under Strategic Goal B of the CBD's Aichi Strategic Plan, stipulates that "by 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment". The cases of IAS occurrence in the Mediterranean Sea showed that eradicating them can be achieved only for limited surface areas or specific sites (e.g: marine protected areas). Therefore effort should be oriented to the control of pathways and vectors and to establishing early warning systems.

Geographical scale:

The appropriate geographical (spatial) scale for the monitoring and the management of non-indigenous species may significantly vary from one species to another depending on the biological and ecological features of the species. It depends also on the rate of spread of the non-indigenous species which is a combined result of its capacity to adapt to the prevailing environmental conditions and of the resilience capacity of the native species and assemblages to the biological invasion.

For the purpose of the evaluation of the GES in the Mediterranean Sea, the monitoring and the assessment of impacts of non-indigenous species should be undertaken at national level

with special focus for areas with high risk of non-indigenous species introduction (ballast water discharging zones, ports, marinas, aquaculture facilities, marine aquariums, etc.).

The Initial Integrated Assessment of the Mediterranean Sea and Coastal Areas, carried out as part of Step 3 of the road map for the application of the Ecosystem Approach showed that, although the spread of invasive species is an issue of concern for most of the Mediterranean Sea zones, the Eastern and Central basins are particularly affected by biological invasion. It is therefore important to use the results of national assessments regarding EO2 to compile evaluations for each of the sub-regions used for the Initial Integrated Assessment.

2.3 GES description and targets with regard to Ecological Objective 3 (Harvest of commercially exploited fish and shellfish)

Considering the important role GFCM has in the management of Mediterranean fisheries, the elaboration of GES description and related targets regarding EO3 were made taking into account the approaches followed by GFCM to collect data and to produce stock assessments for the exploited species. Furthermore, the GFCM Secretariat provided valuable comments that were taken into account by the Biodiversity and Fisheries Cluster.

Proposed GES description and targets for Ecological Objective 3 (Harvest of commercially exploited fish and shellfish)

Operational objective	Indicator	Proposed GES Description	Proposed Targets
3.1 Level of exploitation by commercial fisheries is within biologically safe limits	3.1.1 Total catch by operational unit ¹⁹	Total catch does not exceed the Maximum Sustainable Yield (MSY) ²⁰ . Remark: If only landings by commercial fleet are considered, the total catch would not reflect all the fish biomass removed from the stock, since IUU and recreational fishing may generate significant taking in some stocks. However data on IUU and recreational fishing are missing for most areas and stocks.	40% MSY as precautionary limit reference point. ²¹
	3.1.2 Total effort by operational unit ²²	Total effort does not exceed the level of effort allowing the Maximum Sustainable Yield (MSY). It includes the effort deployed by commercial fleet and estimated effort from recreational fishing and IUU operators.	Fishing effort does not exceed the level of effort allowing 40% of the MSY

¹⁹ Where the Total catch data are not available at Operational Unit level, Total catch by stock will be considered

²⁰ MSY: The largest annual catch that may be taken from a stock every year without affecting the catch of future years

²¹ The Secretariat received a comment from one Party stressing that 40% is not a realistic figure, since it requires drastic decline in the fishing effort. It proposed to have MSY as the upper limit it would help.

²² Where the Total effort data are not available at Operational Unit level, Total effort by stock will be considered

	3.1.3 Catch per unit effort (CPUE) by operational unit	Stable or increasing CPUE ²³	Stable or positive trend.
	3.1.4 Ratio between catch and biomass index (hereinafter catch/biomass ratio).	The catch/biomass ratio allows to recover the stock or to maintain it at a level where it can produce the Maximum Sustainable Yield (MSY) Remark: This ratio can be calculated only if regular sampling programmes are carried out by the countries	
	3.1.5 Fishing mortality	Fishing mortality in the stock does not exceed the level that allows MSY ($F \leq F_{MSY}$)	$F_{0.1}$
3.2 The reproductive capacity of stocks is maintained	3.2.1 Age structure determination (where feasible)	Size structure of the stocks allows to maintain or to reach the Maximum yield-per-recruit	Average size of fish caught > average size at maturity. ²⁴
	3.2.2 Spawning Stock Biomass (SSB)	The spawning stock biomass (SSB) is at a level capable of providing MSY or higher	

Species to be considered:

Decision 20/4 stipulated that the choice of indicator species for collecting information for Ecological Objective 3 should be derived from (i) the List of species whose exploitation is regulated appearing in Annex III of the Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean and (ii) the List of GFCM Priority Species. It also stipulated that choice of indicators species for EO3 should cover all trophic levels, and if possible, functional groups, using the species listed in Annex III of SPA/BD Protocol, the species in the GFCM Priority Species list and/or, as appropriate the stocks covered under regulation (EC) No 199/2008 of 25 February 2008 concerning the establishment of a Community framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy.

However, considering that the calculation of the indicators set for EO3 requires series of data about commercial catches as well as data from the scientific monitoring surveys of stocks, the selection of species to be considered should take also into account the availability and quality of these data.

The recent assessments made within the framework of GFCM indicate that 90% of the assessed fish stocks are subject to full or overfishing status. It is therefore obvious that EO3 (Populations of selected commercially exploited fish and shellfish are within biologically safe

²³ Not to be applied for gregarious species such as small pelagic. For other species, if CPUE data are not available at Operational Unit level, CPUE at the stock level will be considered.

²⁴ The Secretariat received a comment from one Party proposing the following wording: "Size (length) at first capture > average size at maturity"

limits, exhibiting a population age and size distribution that is indicative of a healthy stock) can be achieved only if fishing mortality decreases to levels that ensure, for each fish stock, an increase of SSB and a healthy age structure distribution allowing a full reproductive capacity.

Considering that most of the Mediterranean fisheries are multi-specific with a limited number of fisheries targeting only one species, the determination of GES for EO3 within a context of an Ecosystem Approach should be based on the assessment of the adopted indicators for a set of species belonging to different trophic levels. Considering the above criteria, the following species are proposed to be considered:

		Pelagic/ Demersal	Province
<i>Thunnus thynnus</i>	High trophic level fish predator	Pelagic	Neritic/ Oceanic
<i>Xiphias gladius</i>	High trophic level fish predator	Pelagic	Neritic/ Oceanic
<i>Engraulis encrasicolus</i>	Planktivorous fish	Pelagic	Neritic
<i>Sardina pilchardus</i>	Planktivorous fish	Pelagic	Neritic
<i>Merluccius merluccius</i>	Predator fish, (lives between 70 and 370 m)	Demersal	Neritic
<i>Mullus barbatus</i>	Predator Fish (medium trophic level) (Sand and soft bottoms at depths less than 100 m)	Demersal	Neritic
<i>Mullus surmuletus</i>	Predator Fish (medium trophic level) (Lives on broken and rough grounds but found also on sand and soft bottoms at depths ranging from 5 to 400 m)	Demersal	Neritic/
<i>Parapenaeus longirostris</i>	Crustacean	Demersal	Oceanic
<i>Scyliorhinus canicula</i>	Predator fish	Demersal	Neritic/ Oceanic
<i>Nephrops norvegicus</i>	Crustacean	Demersal	Neritic/ Oceanic

Geographical scale:

As part of the guidance for a common methodology to be used by clusters, the ECAP Coordination Group recommended that scales should be national and when possible regional (Mediterranean) and transboundary or sub-regional. Currently, around half of the Mediterranean countries have stock assessments for some of the stocks being fished on their national waters.

Under GFCM, stock assessments are made by Geographical Sub-Areas (GSA) established as management units in 2001 and amended in 2009 (RESOLUTION GFCM/33/2009/2). The GSA delimitation is mainly based on practical considerations rather than on the stock distribution, and many stocks extend beyond the geographic limits of GSAs. However, although the concept of their delimitation still needs further consideration, the GSAs, as established by GFCM appear as the most appropriate subdivisions for stock assessments for management purposes in the Mediterranean Sea. They are also adopted for assessments at national level.

2.4 GES description and targets with regard to Ecological Objective 4 (Marine food webs)

A healthy marine ecosystem requires a proper functioning of its food web. However, the balance of the food web may be altered by excessive taking of biomass in one or more trophic levels by fishing or through any other form of disturbance. The proposed indicators for both Operational Objectives of Ecological Objective 4 are overlapping with the indicators set for the Ecological Objective 3 (Harvest of commercially exploited fish and shellfish). The Focal Points for SPA and Biodiversity and Fisheries Cluster will be invited to (i) review the GES description and targets proposed in the following table and (ii) give further consideration to the 4 indicators set for EO4 with the view of selecting trophic groups and keys species while ensuring harmonization with EO3 .

Proposed GES description and targets for Ecological Objective 4 (Marine food webs)

Operational objective	Indicator	Proposed GES Description	Proposed Targets
4.1 Ecosystem dynamics across all trophic levels are maintained at levels capable of ensuring long-term abundance of the species and the retention of their full reproductive capacity	4.1.1 Production per unit biomass estimates for selected trophic groups and key species, for use in models predicting energy flows in food webs	Production per unit biomass allows for levels of energy flows in food webs that sustain the long-term abundance of the species and the retention of their full reproductive capacity	Quantitative targets may be established if baseline information will be available. (Remark: modelling energy flows in food web requires a significant amount of data) ²⁵
	4.2 Normal proportion and abundances of selected species at all trophic levels of the food web are maintained	4.2.1 Proportion of top predators by weight in the food webs	The ratio of top predator is at level that will not have long-term adverse effects on food web dynamics and related viability
	4.2.2 Trends in proportion or abundance of habitat-defining groups	The population size and density of the habitat-defining species are at levels ensuring the long term maintenance of the ecosystem	No [human induced] decrease in population abundance and density The species shows a positive trends in population abundance and density (for

²⁵ The use of MTI (Marine Trophic Index) is recommended for the areas with accurate data about fishery catches.

			recovering ecosystems)
	4.2.3 Trends in proportion or abundance of taxa with fast turnover rates	Taxa with fast turnover rates significantly contribute in maintaining food web dynamics	The partitioning of biomass among trophic levels is adapted to the trophic structure of the ecosystem

Geographical scale:

Considering the knowledge gaps on food webs in Mediterranean ecosystems and the impact of the continuous change in species composition induced by NIS, in particular in the Eastern Basin, the GES description and Targets for EO4 should be addressed at local level.

2.5 GES description and targets with regard to Ecological Objective 6 (Sea-floor integrity)

Many human activities generate physical damages to the sea-floor. These include bottom trawling, towed fishing gear, bottom set nets, dredging activities, sediment disposal, seabed mining, drilling, marine installations, cable and pipeline laying, dumping, anchoring, land reclamation, sand and gravel extraction. Many Mediterranean countries have regulations aimed at controlling such activities. However given the heavy consequences of the impacts they generate, in particular to sensitive habitats and habitats with low recovering capacity, a stricter control should be enforced to minimise the physical alteration to the sea-floor.

Proposed GES description and targets for Ecological Objective 6 (Sea-floor integrity)

Operational objective	Indicator	Proposed GES Description	Proposed Targets
6.1 Extent of physical alteration to the substrate is minimized	6.1.1 Distribution of bottom impacting activities	Limited distribution of bottom impacting activities	All bottom impacting activities are regulated. Maritime Spatial Planning is used to control bottom impacting activities
	6.1.2 Area of the substrate affected by physical alteration due to the different activities	Limited surface area of the substrate affected by bottom impacting activities (for sensitive substrate types)	Threshold may be established if baseline information will be available.
6.2 Impact of benthic disturbance in priority benthic habitats is minimized	6.2.1 Impact of bottom impacting activities in priority benthic habitats	Impact of bottom impacting activities on priority benthic habitats is minimized	No priority benthic habitat impacted by bottom impacting activities

	6.2.2 Change in distribution and abundance of indicator species in priority habitats	The population size and density of the habitat-defining species are at levels ensuring the long term maintenance of the Habitat	<p>State No [human induced] decrease in population abundance and density</p> <p>The species shows a positive trends in population abundance and density (for recovering habitats)</p>
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Benthic habitats to be considered:

The priority habitats to be considered for the determination of GES in relation to Ecological Objective 6 are coastal lagoons and marshes, intertidal areas, seagrass meadows, coralligenous communities, sea mounts, submarine canyons and slopes, deep-water coral, hydrothermal vents and the marine vegetal assemblages listed as natural monuments by the Marine Vegetation Action Plan²⁶ (Barrier reefs of Posidonia, organogenic surface formations, terraces (platforms with vermitids covered by soft algae) and certain Cystoseira belts).

Sources and availability of data:

Considering that most of the indicators set for the two Operational Objectives of Ecological Objective 6 are pressure oriented, data for the required assessments are available in many countries at least for the declared activities. However baseline information is available only for very limited zones.

Geographical scale:

The assessments for the determination of GES and targets in relation to the Ecological Objectives 6 (Sea-floor integrity) will be made at national level. National inventories of the priority habitats listed in the above section 8.2.

²⁶ The Action Plan for the conservation of marine vegetation in the Mediterranean Sea has been adopted by the Eleventh Ordinary meeting of the Contracting Parties to the Barcelona Convention and its Protocols (Malta, 27-30 October 1999).

Annex 1: The Mediterranean Ecological Objectives adopted by the Contracting Parties to the Barcelona Convention within the framework of the Ecosystem Approach

1. **Biological diversity is maintained** or enhanced. The quality and occurrence of coastal and marine habitats and the distribution and abundance of coastal and marine species are in line with prevailing physiographic, hydrographic, geographic, and climatic conditions.
2. **Non-indigenous species** introduced by human activities are at levels that **do not adversely alter the ecosystem**.
3. **Populations of selected commercially exploited fish and shellfish are within biologically safe limits**, exhibiting a population age and size distribution that is indicative of a healthy stock.
4. **Alterations to components of marine food webs** caused by resource extraction or human-induced environmental changes **do not have long-term adverse effects** on food web dynamics and related viability.
5. **Human-induced eutrophication is prevented**, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algal blooms, and oxygen deficiency in bottom waters.
6. **Sea-floor integrity is maintained**, especially in priority benthic habitats.
7. **Alteration of hydrographic conditions does not adversely affect coastal and marine ecosystems**.
8. The **natural dynamics of coastal areas are maintained** and **coastal ecosystems and landscapes are preserved**.
9. **Contaminants cause no significant impact** on coastal and marine ecosystems and human health.
10. **Marine and coastal litter does not adversely affect coastal and marine environments**.
11. **Noise from human activities causes no significant impact** on marine and coastal ecosystems.