GENERAL FISHERIES COMMISSION FOR THE MEDITERRANEAN

COMMISSION GÉNÉRALE DES PÊCHES POUR LA MÉDITERRANÉE

SCIENTIFIC ADVISORY COMMITTEE (SAC)

Sixteenth session

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Proposal on the definition of Good Environmental Status and associated indicators and targets for commercially exploited fish and shellfish populations

INTRODUCTION

1. Within the framework of the Memorandum of Understanding signed with UNEP-Map in 2012, and supported by a dedicated FWP project (*Medsuit: A Mediterranean Cooperation for the Sustainable Use of Marine Biological Resources* funded by the Italian Ministry of Environment and presented to the 37th Commission), preliminary work on harmonizing the definition and assessment of good environmental status for marine living resources has been carried out in the period of December 2013 – January 2014.

2. As a first result of this work, a technical proposal for the identification of operational objectives, indicators, Good Environmental Status (GES) and targets for Ecological Objective 3 (Harvest of commercially exploited fish and shellfish) within the UNEP-MAP Ecosystem Approach Process (EcAP) was prepared by the GFCM Secretariat. The proposal took into account initial drafts discussed through the EcAP, and especially the work done by the different GFCM technical bodies, including the work by the SAC and in particular in the Subcommittee of Stock Assessment, the GFCM Guidelines for multiannual management plans[1], and the technical aspects on indicators and reference points discussed during the Framework Programme meetings on management plans[2]. An initial draft of this document has been presented in the UNEP-Map Integrated Correspondence Groups of GES and Targets meeting (Athens, Greece, 17-19 February 2014), and this document is a revised version including the comments received.

SUGGESTED ACTIONS BY THE SAC

3. SAC may wish to review this document and provide comments and guidance referring future steps of the common work with UNEP-MAP and of the MedSuit project.

[1] These guidelines are referred to as Resolution OTH-GFCM/36/2012/1 in the Compendium of GFCM decisions

[2] Framework Programme Sub-Regional Workshop on Fisheries Management for Western, Central and Eastern Mediterranean (Tunisia, 7–10 October 2013) and Workshop to test the feasibility of implementing multiannual management plans in the Black Sea (Turkey, 24–25 February 2014)

Future steps proposed include:

- Discussion of the proposal by the SAC
- Information to the next Integrated Correspondence Groups of UNEP-Map on the conclusions of the SAC
- Discussion and adoption by the next meeting of the Commission (GFCM)
- Discussion and adoption by the next Meeting of the Contracting Parties of the Barcelona Convention and its Protocols.

In addition to these steps for the integration of the GFCM proposal into the EcAP process, further steps of the MedSuit project include:

- a regional workshop/meeting on GES and targets,
- the possibility to launch a case study at sub-regional level (possibly in the Adriatic Sea).

CONTRIBUTION OF GFCM TO THE EcAp PROCESS WITHIN THE EXISTING MEMORANDUM OF UNDERSTANDING BETWEEN UNEP/MAP AND GFCM

GFCM draft proposal for determination of Good Environmental Status (GES) and GES targets with regard to Ecological Objective 3 (Harvest of commercially exploited fish and shellfish)

Ecological Objective 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

1.1 Operational Objectives and Indicators

Three operational objectives have been included with the aim to collect information from commercial species directly related with fishing, but also from non-commercial species and vulnerable species, directly related with biodiversity issues. These ecological objectives are defined to assess both stock status but also the impact of fishing on the community and the ecosystem with the aim to ensure the long term sustainability of fishing with a low impact on marine communities and ecosystems. Thus, the indicators are applied to populations (exploited), to communities and to the ecosystem as a whole, capturing the different levels of biodiversity organization (see Table 4).

Table 1. Operational objectives and indicators.

Operational objective	Indicator	Proposed GES Description	Proposed Targets	Similar indicators from other policies	Suggestions for development
3.1 Level of exploitation by commercial fisheries allows populations to be within biological safe limits	***3.1.1 Total catch***	Total catch of commercial species does not exceed the Maximum Sustainable Yield (MSY) and the by-catch is reduced. *Description: The total catch is the quantity of fish which is retained by the fishing gear during fishing operations. This should ideally include landings by commercial fleet, recreational fishing, by catch and IUU estimates. The Maximum Sustainable Yield is the theoretical maximum catch that can be extracted from a stock. Due to difficulties to calculate MSY, this should be a limit. This indicator is linked with sustainable fishing and conservation of biodiversity.*	State -Long-Term High Yields -Catch < MSY Pressure -Reduction of IUU catch -Minimization of discarding and by-catch	-CFP -MSFD -IndiSeas	Regularly monitored by GFCM

Operational objective	Indicator	Proposed GES Description	Proposed Targets	Similar indicators from other policies	Suggestions for development
	3.1.2 Fishing mortality	Fishing mortality in the stock does not exceed the level that allows MSY ($F \leq F_{MSY}$). *Description: The Maximum Sustainable Yield is, theoretically, the maximum yield that can be obtained from a species, and it is associated with a maximum fishing mortality (F_{MSY}). When F is higher than F_{MSY} the yield decreases. F_{MSY} is consider as a limit due to the consequences of overestimating F. Only available if the stock has been assessed. Fishing mortality (F) reflects all deaths in the stock that are due to fishing per year (not only what is actually landed). It is usually expressed as a rate ranging from 0 (for no fishing) to high values (1.0 or more). It is common practice to refer F as a scalar value but it would be more appropriate to refer to it as a vector. This indicator is linked with sustainable fishing.*	Pressure -F_{MSY} -$F_{0.1}$ a proxy of F_{MSY} (more precautionary)	-CFP -MSFD	Regularly monitored by GFCM
	3.1.3 Biomass indices	Stable or increasing biomass indices (relative or absolute), with absolute value at or above biomass that produces MSY. *Description: Biomass indices can be calculated when scientific surveys (trawling, acoustics, etc.) are available. Different targets can be used, such as acceptable stock size, safe biological limits, historical level of Catch per unit of effort (CPUE), Trend of CPUE increasing per year, Historical level of standardized index of abundance form scientific surveys. In the Mediterranean Sea, regional data is not available for many species. This indicator is linked with sustainable fishing and conservation of biodiversity.*	State -Positive trend -Biomass at MSY (Bmsy) (when MSY available)	-CFP -MSFD -IndiSeas	Regional data is not available for many species

Operational objective	Indicator	Proposed GES Description	Proposed Targets	Similar indicators from other policies	Suggestions for development
	3.1.4 Ratio between catch and biomass index (catch/biomass ratio)	The catch/biomass ratio allows to recover the stock or to maintain it at a level where it can produce the MSY *Description: The Catch/Biomass ratio should entail a low risk of collapse of the species, and a high probability of recovery of the stock. If the species is at risk, it should entail a low time frame of recovery. This indicator is linked with sustainable fishing.*	Pressure - Negative trend	-CFP -MSFD -IndiSeas	Regularly monitored by GFCM (but regional data for biomass not available for many species)
	3.1.5. Spatial distribution of the population	The spatial distribution of the population is maintained or increases. *Description: It is important to know the spatial distribution of species: Species with wider distributions are less vulnerable to fishing. However, regional data is not always available. This indicator is linked with sustainable fishing and conservation of biodiversity.*	State - Positive trend	-CFP-EC -MSFD	Regularly monitored by GFCM
3.2 The reproductive capacity of stocks is maintained	***3.2.1. Length distribution of the population in the catch***	The mean size of organisms in the catch (Lt) is larger than the mean size at first maturity (Lm) *Description: May reflect the extent of undesirable genetic effects of exploitation. To calculate this indicator, the mean size at first maturity is needed by species in the catch, in addition to the size of species in the catch. It can also be used to compare it with the minimum conservation size (for example, to protect juveniles with minimum sizes). The length distribution of the population in the catch will be available only for those target species with monitoring programs dedicated to collect length distribution data. This indicator is linked with sustainable fishing.*	State - Lt > Lm	-CFP -MSFD	Regularly monitored by GFCM

Operational objective	Indicator	Proposed GES Description	Proposed Targets	Similar indicators from other policies	Suggestions for development
	3.2.2 Spawning Stock Biomass (SSB)	The Spawning Stock Biomass is at a level at which reproduction capacity is not impaired *Description: The Spawning Stock Biomass, usually referred to as SSB, is the total weight of the spawning stock. The SSB is available through stock assessment so not all species will have this information. Note that B_{MSY} is currently not considered as a threshold for stock management in European waters and values are not available. When both 3.1.3 and 3.2.3 indicators are available (only for few species) the most precautionary will be adopted. Only available if the stock has been assessed. This indicator is linked with sustainable fishing.*	State -B > B_{thr} ($2xB_{lim}$)	-CFP -MSFD	Regularly monitored by GFCM (only for fully assessed species)
3.3. The impact of fishing activities in the ecosystem is low	***3.3.1. Mean Trophic Level of the catch (and community)***	The Mean Trophic Level does not decrease with time *Description: These indicators are being used with the CBD and other programs. To calculate these indicators, time series of catch per species or biomass (tones) and trophic level of the species are needed. The trophic level per species can be obtained from FishBase, SeaLifeBase, or regional datasets and models. This indicator is linked with sustainable fishing and conservation of biodiversity.*	State -Positive trend	-MSFD -CBD -IndiSeas -OSPAR	Currently not monitored but likely feasible in the future (especially using catch data)
	3.3.2. Proportion of large fish in the catch (and the community)	The proportion of large fish is maintained or increases with time *Description: The large fish indicator (LFI) reflects the size structure of the fish assemblage, which is assumed to be primarily affected by size-selective exploitation but is*	State -Positive trend	-MSFD -IndiSeas	Currently not monitored but likely feasible in the future (especially using catch data)

Operational objective	Indicator	Proposed GES Description	Proposed Targets	Similar indicators from other policies	Suggestions for development
		mediated by species composition as well as the fishing-induced reduction of life expectancy of each exploited species. The LFI = WLargeFish / Wtotal, where WLargeFish *is the weight of fish greater than a chosen length (cm) and Wtotal is the total weight of all fish in the catch or survey. For the Mediterranean Sea we need to define "Large Fish". This indicator can be calculated from the catch and from surveys (if data is available). This indicator is linked with sustainable fishing and conservation of biodiversity.*			
	3.3.3. Proportion of predatory fish in the catch (and in the community)	The proportion of predatory fish in the population is maintained or increases with time *Description: This indicator complements 3.3.3 and uses time series of total catch and catch of predatory species. This indicator can be calculated from biomass surveys if data is available. The definition of predatory fish should be specifically defined for the Mediterranean region. This indicator is linked with sustainable fishing and conservation of biodiversity.*	State -Positive trend	-MSFD -IndiSeas	Currently not monitored but likely feasible in the future (especially using catch data)
	3.3.4. Proportion of all exploited species with declining biomass in the population	The proportion of species with declining biomass in the population is reduced with time *Description: this indicator is based on data from 3.1.3 (Biomass indices) and will be only calculated when time series of survey biomass of retained species is available. This indicator is linked with sustainable fishing and conservation of biodiversity.*	State -Negative trend	-IndiSeas	Currently not monitored but likely feasible in the future if survey data available

Definitions from the table:

MSY: The largest annual catch that may be taken from a stock every year without affecting the catch of future years.
IUU: Illegal, unreported and unregulated fishing
Surveyed species (Definition from IndiSeas project, to be revised for the Mediterranean): These are species sampled by researchers during routine surveys (as opposed to species sampled in catches by fishing vessels), and should include species of demersal and pelagic fish (bony and cartilaginous, small and large), as well as commercially important invertebrates (squids, crabs, shrimps…). Intertidal and subtidal crustaceans and molluscs such as abalones and mussels, mammalian and avian top predators, and turtles, should be excluded. Surveyed species are those that are considered by default in the calculation of all survey-based indicators.
Retained species (landed) (Definition from IndiSeas project, to be revised for the Mediterranean)**:** These are species caught in fishing operations, although not necessarily targeted by a fishery (i.e. include by-catch species), and which are retained because they are of commercial interest, i.e. not discarded once caught, although this does not imply that sometimes certain size classes of that species may be discarded. A non-retained species is considered to be one that would never be retained for consumptive purposes. Intertidal and subtidal crustaceans and molluscs such as abalones and mussels are to be excluded. Retained species are those that are considered by default in the calculation of all catch-based indicators.
Predatory fish species (Definition from IndiSeas project, to be revised for the Mediterranean): Predatory fish are considered to be all surveyed fish species that are not largely planktivorous (i.e. phytoplankton and zooplankton feeders should be excluded). A fish species is classified as predatory if it is piscivorous, or if it feeds on invertebrates that are larger than the macrozooplankton category (> 2cm). Detritivores should not be classified as predatory fish.

1.2 Species to be considered: Groups of priority species identified by GFCM

Table 2. Priority species

Group I	Group II		Group III	
Engraulis encrasicolus	*Alosa pontica*	*Sprattus sprattus*	*Alopias superciliosus*	*Siganus rivulatus*
Merluccius merluccius	*Aristaeomorpha foliacea*	*Squilla mantis*	*Alopias vulpinus*	*Lagocephalus sceleratus*
Mullus barbatus	*Aristeus antennatus*	*Trachurus mediterraneus*	*Carcharhinus plumbeus*	*Saurida undosquamis*
Mullus surmuletus	*Boops boops*	*Trachurus picturatus*	*Centrophorus granulosus*	*Marsupenaeus japonicus*
Nephrops norvegicus	*Chamelea gallina*	*Trachurus trachurus*	*Dalatias licha*	*Scomberomorus commerson*
Parapenaeus longirostris	*Coryphaena hippurus*		*Dipturus oxyrhincus*	*Fistularia commersonii*
Psetta maxima	*Diplodus annularis*		*Etmopterus spinax*	*Metapenaeus stebbingi*
Sardina pilchardus	*Eledone cirrhosa*		*Galeus melastomus*	
Sprattus sprattus	*Eledone moschata*		*Heptranchias perlo*	
Squalus acanthias	*Galeus melastomus*		*Hexanchus griseus*	
Trachurus mediterraneus	*Illex coindetii*		*Mustelus asterias*	
	Lophius budegassa		*Mustelus mustelus*	
	Merlangius merlangius		*Mustelus punctulatus*	
	Micromesistius poutassou		*Myliobatis aquila*	
	Octopus vulgaris		*Prionace glauca*	
	Pagellus bogaraveo		*Pteroplatytrygon violacea*	
	Pagellus erythrinus		*Raja asterias*	
	Psetta maxima		*Raja clavata*	
	Raja asterias		*Raja miraletus*	
	Raja clavata		*Raja undulata*	
	Sardinella aurita		*Scyliorhinus canicula*	
	Scomber japonicus		*Scyliorhinus stellaris*	
	Scomber scombrus		*Sphyrna tudes*	
	Sepia officinalis		*Squalus acanthias*	
	Solea vulgaris		*Squalus blainvillei*	
	Sphyraena sphyraena		*Torpedo marmorata*	

Table 3. Vulnerable species

Group of vulnerable species	Family	Species	Common name
Cetaceans	Balaenopteridae	*Balaenoptera acutorostrata*	Common minke whale
		Balaenoptera borealis	Sei whale
		Balaenoptera physalus	Fin whale
		Megaptera novaeangliae	Humpback whale
	Balenidae	*Eubalaena glacialis*	North Atlantic right whale
	Physeteridae	*Physeter macrocephalus*	Sperm whale
		Kogia simus	Dwarf Sperm Whale
	Phocoenidae	*Phocoena phocoena*	Harbor porpoise
	Delphinidae	*Steno bredanensis*	Rough-toothed dolphin
		Grampus griseus	Risso's dolphin
		Tursiops truncatus	Common bottlenose dolphin
		Stenella coeruleoalba	Striped dolphin
		Delphinus delphis	Common dolphin
		Pseudorca crassidens	False killer whale
		Globicephala melas	Long-finned pilot whale
		Orcinus orca	Killer whale
	Ziphiidae	*Ziphius cavirostris*	Cuvier's beaked whale
		Mesoplodon densirostris	Blainville's beaked whale
Seals	Phocidae	*Monachus monachus*	Mediterranean monk seal
Sharks, Rays, Chimaeras*	Carcharhinidae	*Carcharias taurus*	Sand tiger
		Carcharodon carcharias	Great white shark
		Prionace glauca	Blue shark
	Cetorhinidae	*Cetorhinus maximus*	Basking shark
	Gymnuridae	*Gymnura altavela*	Spiny butterfly ray
	Lamnidae	*Isurus oxyrinchus*	Shortfin mako
		Lamna nasus	Porbeagle

Group of vulnerable species	Family	Species	Common name
Sharks, Rays, Chimaeras	Myliobatidae	*Mobula mobular*	Devil fish
	Odontaspididae	*Odontaspis ferox*	Small-tooth sand tiger shark
	Oxynotidae	*Oxynotus centrina*	Angular rough shark
	Pristidae	*Pristis pectinata*	Smalltooth Sawfish
		Pristis pristis	Common sawfish
	Rajidae	*Dipturus batis*	Common skate
		Leucoraja circularis	Sandy ray
		Leucoraja melitensis	Maltese skate
		Rostroraja alba	Bottlenose skate
	Rhinobatidae	*Rhinobatos cemiculus*	Blackchin guitarfish
		Rhinobatos rhinobatos	Common guitarfish
	Sphyrnidae	*Sphyrna lewini*	Scalloped hammerhead
		Sphyrna mokarran	Great hammerhead
		Sphyrna zygaena	Smooth hammerhead
	Squatinidae	*Squatina aculeata*	Sawback angel shark
		Squatina oculata	Smoothback angel shark
		Squatina squatina	Angel shark
	Triakidae	*Galeorhinus galeus*	School/Tope shark
Sea Turtles	Cheloniidae	*Caretta caretta*	Loggerhead turtle
		Chelonia mydas	Green turtle
	Dermochelyidae	*Dermochelys coriacea*	Leatherback sea turtle
Seabirds	Falconidae	*Falco eleonorae*	Eleonora's Falcon
	Cerylidae	*Ceryle rudis*	Pied Kingfisher
	Charadriidae	*Charadrius alexandrinus*	Kentish Plover
		Charadrius leschenaultii columbinus	Greater Sand Plover
	Halcyonidae	*Halcyon smyrnensis*	White-throated Kingfisher
	Hydrobatidae	*Hydrobates pelagicus*	European Storm-Petrel
		Hydrobates pelagicus melitensis	European Storm-Petrel
		Hydrobates pelagicus pelagicus	European Storm-Petrel
	Laridae	*Larus audouinii*	Audouin's Gull

Group of vulnerable species	Family	Species	Common name
Sea birds		*Larus armenicus*	Armenian Gull
		Larus genei	Slender-billed Gull
		Larus melanocephalus	Mediterranean Gull
	Pandionidae	*Pandion haliaetus*	Osprey
	Pelecanidae	*Pelecanus crispus*	Dalmatian Pelican
		Pelecanus onocrotalus	Great White Pelican
	Phalacrocoracidae	*Phalacrocorax aristotelis*	European Shag
		Phalacrocorax pygmaeus	Pygmy Cormorant
	Phoenicopteridae	*Phoenicopterus ruber*	American Flamingo
	Procellariidae	*Calonectris diomedea*	Cory's Shearwater
		Puffinus puffinus yelkouan	Yelkouan Shearwater
		Puffinus yelkouan	Mediterranean Shearwater
		Puffinus muretanicus	Balearic Shearwater
	Scolopacidae	*Numenius tenuirostris*	Slender-billed Curlew
	Sternidae	*Sterna albifrons*	Little Tern
		Sterna bengalensis	Lesser Crested Tern
		Sterna sandvicensis	Sandwich Tern
		Sterna caspia	Caspian Tern
		Sterna nilotica	Gull-billed Tern

- **Group I:** Species that drive the fishery and for which assessment is regularly carried out.
- **Group II:** Species that are important in terms of landing and/or economic values at regional and subregional level and for which assessment is not regularly carried out.
- **Group III:** Species under international or national management plans; species under recovery and/or action plans for conservation. This Group 3 also contains a list of non-indigenous species with the greatest potential impact.
- **Vulnerable species:** List of endangered or threatened species included in the Appendix II-III of the SPA/BD Protocol of the Barcelona Convention (Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean).

Table 4. Group of Species included in each indicator, biodiversity components addressed, cost-effectiveness and possible overlap with common indicators

Operational objective	Indicator	Species included	GES general objective	Biodiversity components	Cost-effective	Potential overlap with Common Indicators
3.1 Level of exploitation by commercial fisheries allows populations to be within biological safe limits	***3.1.1 Total catch***	-Priority species (I-II-III) -Vulnerable species	-Sustainable fishing -Conservation of biodiversity	- exploited populations - communities - ecosystem	Regularly monitored by GFCM	
	3.1.2 Fishing mortality	-Priority species (I)	-Sustainable fishing	- exploited populations	Regularly monitored by GFCM (only for fully assessed species)	
	3.1.3 Biomass indices	-Priority species (I-II-III) -Vulnerable species	-Sustainable fishing -Conservation of biodiversity	- exploited populations - communities - ecosystem	Regional data is not available for many species	Common indicator 4 (population abundance)
	3.1.4 Ratio between catch and biomass index (catch/biomass ratio)	-Priority species (I-II-III) -Vulnerable species	-Sustainable fishing	- exploited populations - communities - ecosystem	Regularly monitored by GFCM (but regional data for biomass not available for many species)	
	3.1.5. Spatial distribution of the population	-Priority species (I-II)	-Sustainable fishing -Conservation of biodiversity	- exploited populations - communities - ecosystem	Regional data is not available for many species (to the level of GSA (only for fully assessed species)	Common indicator 3 (species distributional range)

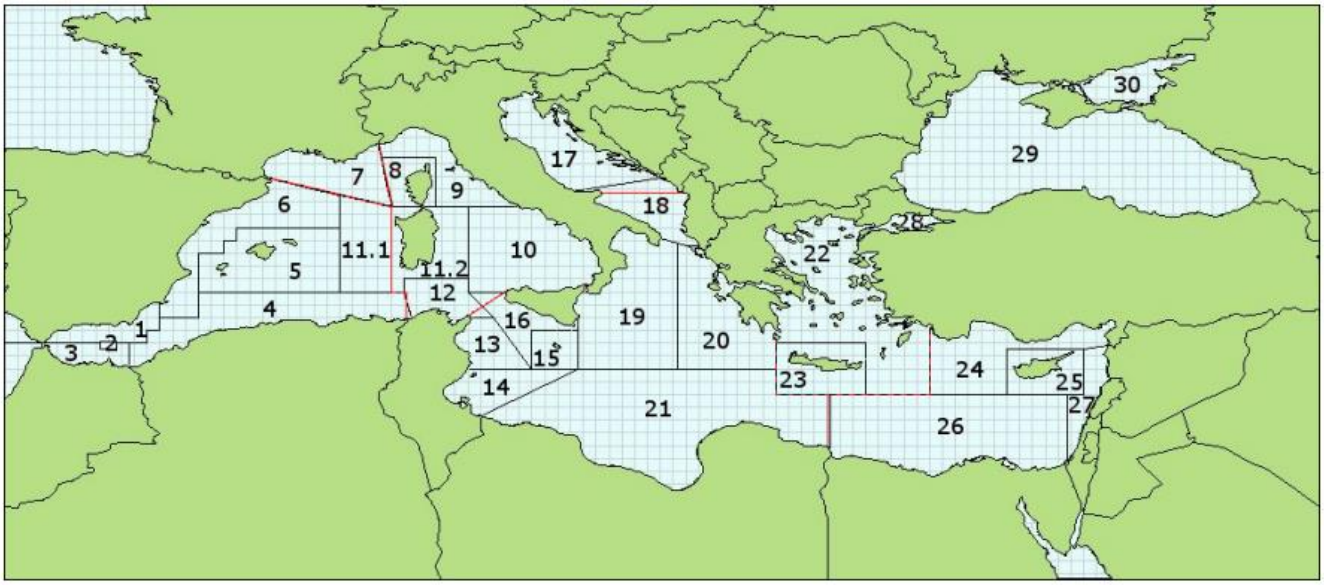
3.2. The reproductive capacity of stocks is maintained	***3.2.1. Length distribution of the population in the catch***	-Priority species (I-II)	-Sustainable fishing	- exploited populations - communities	Regularly monitored by GFCM	Common indicator 5 (population demographic characteristics)
	3.2.2 Spawning Stock Biomass (SSB)	-Priority species (I-II)	-Sustainable fishing	- exploited populations	Regularly monitored by GFCM (only for fully assessed species)	
3.3. The impact of fishing activities in the ecosystem is low	***3.3.1. Mean Trophic Level of the catch (and community)***	-Priority species (I-II-III) -Vulnerable species	-Sustainable fishing -Conservation of biodiversity	- exploited populations - communities - ecosystem	Currently not monitored but likely feasible in the future (especially using catch data)	
	3.3.2. Proportion of large fish in the catch (and the community)	-Priority species (I-II-III) -Vulnerable species	-Sustainable fishing -Conservation of biodiversity	- exploited populations - communities	Currently not monitored but likely feasible in the future (especially using catch data)	
	3.3.3. Proportion of predatory fish in the catch (and in the community)	-Priority species (I-II-III) -Vulnerable species	-Sustainable fishing -Conservation of biodiversity	- exploited populations - communities - ecosystem	Currently not monitored but likely feasible in the future (especially using catch data)	
	3.3.4. Proportion of all exploited species with declining biomass in the population	-Priority species (I-II-III) -Vulnerable species	-Sustainable fishing -Conservation of biodiversity	- exploited populations - communities - ecosystem	Currently not monitored but likely feasible in the future if survey data available	

1.3 Geographical scale

As part of the guidance for a common methodology to be use 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.

GFCM Geographical Sub-Areas (GSAs)



---- *FAO Statistical Divisions (red)* ---- *GFCM Geographical Sub-Areas (black)*

01 - Northern Alboran Sea	07 - Gulf of Lions	13 - Gulf of Hammamet	19 - Western Ionian Sea	25 - Cyprus Island
02 - Alboran Island	08 - Corsica Island	14 - Gulf of Gabes	20 - Eastern Ionian Sea	26 - South Levant
03 - Southern Alboran Sea	09 - Ligurian and North Tyrrhenian Sea	15 - Malta Island	21 - Southern Ionian Sea	27 - Levant
04 - Algeria	10 - South and Central Tyrrhenian Sea	16 - South of Sicily	22 - Aegean Sea	28 - Marmara Sea
05 - Balearic Island	11.1 - Sardinia (west) 11.2 - Sardinia (east)	17 - Northern Adriatic	23 - Crete Island	29 - Black Sea
06 - Northern Spain	12 - Northern Tunisia	18 - Southern Adriatic Sea	24 - North Levant	30 - Azov Sea

1.4 Sources and availability of data

In the Mediterranean, there are significant discrepancies between sub-regions in terms of availability, quality and relevance of data that could be useful for conducting GES assessments in relation to EO 3.

Within the GFCM mandate a series of stocks are assessed on an annual basis. The data, results including stock status and advice produced by scientists are gathered in Stock Assessment Forms (SAFs) which are data files managed and stored within the GFCM Information System. SAFs prepared by scientist from Mediterranean countries are reviewed by the Scientific Advisory Committee (SAC) of GFCM through its Sub-Committee on Stock Assessment (SCSA) with the view of assessing the stocks status and proposing management recommendations for the consideration and eventual adoption by the Commission.

GFCM has also a specific data requirement in force since 2010, the Task 1 data submission protocol that all its members must comply with. Task 1 includes protocols and standards for qualitative and quantitative data notification/submission by its Members regarding fishing capacity by fleet segment (Task 1.1), fishing activity descriptors and resources exploited (Task 1.2), economic parameters by fleet segment (Task 1.3), catch, effort (Task 1.4) and biological information of the catch (Task 1.5). More recently a new framework for data collection and submission is being developed which will modify the way the data are collected and transmitted by the countries. The same sections as indicated for Task 1 remain and additional boxes will be available for more detailed data on by-catch and biological information. The new (Data Collection Reference Framework) DCRF is now in process of revision by members and will be submitted for adoption by the commission in the next session of 2015.

Stocks assessed (species/GSA) by the SAC of GFCM in 2011 and 2012

Species / GSA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Aristaeomorpha foliacea																											
Aristeus antennatus																											
Boops boops																											
Engraulis encrasicolus																											
Galeus melastomus																											
Glaucostegus cemiculus																											
Merluccius merluccius																											
Mullus barbatus																											
Mullus surmuletus																											
Nephrops norvegicus																											
Pagellus bogaraveo																											
Pagellus erytrinus																											
Parapenaeus longirostris																											
Parapenaeus longirostris																											
Raja asterias																											
Raja clavata																											
Sardina pilchardus																											
Scyliorhinus canicula																											
Shpyraean sphyraena																											
Solea solea																											
Spicara smaris																											

Assessment in 2011 *Assessment in 2012* *Assessment in 2011 and 2012*

In addition to the stock assessments made within the framework of GFCM, the International Commission for the Conservation of Atlantic Tuna (ICCAT) is undertaking on regular basis assessments for the Mediterranean stocks of Bluefin Tuna (*Thunnus thynnus*) and swordfish (*Xiphias gladius*).

European members of the GFCM have also data available regarding abundance and size structure of commercial demersal and pelagic stocks under the Data Collection Framework Directive (such as MEDITS and MEDIAS campaigns).