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Integrated Meeting of the Correspondence Groups on Monitoring

Athens, Greece, 30 March-1 April 2015

**Agenda item 4: Discussion of the Main Elements of the Draft Monitoring and Assessment**

**Recommendations of the Online Informal Working Groups**

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## **Note from the Secretariat**

In accordance with the decision taken at the 4th EcAp Coordination Group meeting held in Athens in October 2014, informal online expert groups on Biodiversity and Non-Indigenous Species (**Biodiversity Working Group**), on Contaminants (**Contaminants Working Group**), on Eutrophication (**Eutrophication Working Group**) and Marine Litter (**Marine Litter Working Group**) were established by the Contracting Parties with the leadership of Croatia, France, Greece and Spain respectively.

Based on the specific recommendations of the respective EcAp Correspondence Groups on Monitoring (**CORMON**), the Informal Online Working Groups focused their work on addressing key outstanding technical monitoring and assessment specifics of their area.

Following extensive consultations of nominated experts in these Informal Online Working Groups under the guidance of the lead countries and the Secretariat, they delivered their First Reports, which are submitted as information documents (UNEP(DEPI)/MED WG 401/Inf.7.; UNEP(DEPI)/MED WG 401/Inf.8; UNEP(DEPI)/MED WG 401/Inf.9 and UNEP(DEPI)/MED WG 401/Inf.10).

These reports address the following monitoring and assessment related technical issues:

- review the definitions (thresholds, baseline, assessment criteria, GES, etc.);
- review the available data in the Mediterranean in relation with EcAp common indicators and highlight key challenges and possible alternative solutions;
- discuss geographical and temporal differences, and address sub-regional specifics;
- in case possible, propose thresholds, baselines, assessment criteria, and GES specification, in light of previous experience of UNEP/MAP and other Regional Sea Conventions, regional bodies, scientific achievements.

Based on these First Reports, the current document brings to the attention of the Integrated Correspondence Group on Monitoring the draft recommendations of the Biodiversity, Contaminants, Eutrophication, and Marine Litter Working Groups, for discussion and as appropriate for agreement.

The Informal Online Working Groups will continue their work, following up on the guidance given and on additional outstanding issues of the monitoring and assessment specifics of the Main Elements of the Draft Integrated Monitoring and Assessment Programme (UNEP(DEPI)/MED WG.411/3) and will report on their further achievements and recommendations, to the upcoming respective Focal Point Meetings (MED POL-REMPEC, RAC/SPA, and PAP/RAC Focal Point Meetings in May-June 2015). They will conclude their work with their final report and recommendations to the EcAp Coordination Group (September 2015).

## **RECOMMENDATIONS OF THE ONLINE INFORMAL WORKING GROUPS**

### **I. INFORMAL ONLINE WORKING GROUP ON BIODIVERSITY AND NON-INDIGENOUS SPECIES**

#### **Introduction**

In accordance with the decision taken at the 4th EcAp Coordination Group meeting held in Athens in October 2014, an on line expert group on Biodiversity and Non-Indigenous Species (**NIS**) was established by the Contracting Parties with the leadership of Greece, with support from the Secretariat.

Based on the specific recommendations of the ECAP Correspondence Group on Monitoring (**CORMON**) Biodiversity and NIS, on Ecological Objectives 1 and 2 UNEP(DEPI)/MED WG.411/Inf.5), and on the specific Terms of References of the Biodiversity and NIS online working group (the Biodiversity Working Group), the experts aimed to:

- deliver environmental and background assessment criteria based on data availability for some common indicators related to Ecological Objective 1 and 2;
- address key outstanding issues which are necessary to start a quantitative monitoring of biodiversity in the region, noting the “de minimis” principle- ie the aim is to set the minimum common ground, which is applicable regionally and feasible to follow all over the region;
- address sub-regional specifics and raise attention to data gaps, research needs and look at alternative, cost effective monitoring methodologies related to biodiversity and NIS monitoring

Following consultations and joint work, the on line group delivered the first report which is presented as information document UNEP(DEPI)/MED WG 401/Inf.7. The report addresses the following issues:

- review the definitions (thresholds, baseline, assessment criteria, GES, etc.),
- review the available data on biodiversity and NIS in the MED in relation with EcAp common indicators and highlight key challenges, possible alternative solutions;
- discuss geographical and temporal differences, address sub-regional specifics;
- propose a “de minimis” list of species and habitats for the purposes of the Integrated Monitoring and Assessment Programme.

Based on the first report of the Biodiversity Working Group (UNEP(DEPI)/MED WG 401/Inf.7), the following draft recommendations are brought to the attention of the integrated Correspondence Group Meeting on Monitoring, for discussions and as appropriate common agreement:

#### **General recommendations**

- Annex I includes the habitats and species lists proposed for biodiversity monitoring in the Mediterranean.
- Overall, it is recommended to select the sound and more easily applicable indicators used or proposed for the implementation of the WFD and MSFD to be used in the whole Mediterranean.
- There is the need for a common and short list of species and habitats for monitoring, along with their associated protocols, to ensure consistency in the biodiversity assessment in order to be applicable regionally and feasible to follow all over the region.
- A few habitats and taxa are recommended to start the monitoring, not because the others are less important, but because the starting of the monitoring process itself is the most important activity for the time being.

- There is a need for a list on specific functional taxa and predominant habitat types taking in account key issues on the composition and functioning of the marine environment in the Mediterranean. Further development of detailed individual species lists (e.g. invertebrates etc.), may provide a limited coverage and may be not representative of the wider environment. Monitoring at a finer scale may be established at a national level in base of the funding opportunities, the taxonomic expertise etc.;
- The ecosystem processes and functions should act as a filter to further prioritise taxa and habitats to be monitored, so that to comply with the Ecosystem Approach.
- Next to the proposed habitats and species lists (Annex I) some taxa that are included in Annex II of Decision IG.21/3 may be useful as specific indicators, e.g. in relation to marine litter and fisheries impacts, thus adding more information to the assessment of the biodiversity status, such as monitoring of stranded or by-caught leatherback sea turtles, other species of marine birds and sea mammals;
- Further development of monitoring on key oceanographic features, such as gyres, upwelling areas, large corridor areas of oceanographic connectivity, etc., or jellyfish population dynamics and blooms, and Harmful Algal Blooms is needed;
- Next to addressing species and ecosystems diversity, the molecular level of the biological organization (e.g. genes) must be taken also in account since the genetic diversity is a key issue also for the Mediterranean;

#### **Specific recommendations regarding monitoring capacity**

- Regarding the monitoring data compilation from countries answers to UNEP/MAP request, the information extracted was found too general, no geo-referenced, providing limited information on the existing operational or institutional monitoring in the Mediterranean (see excel file monitoring capacity);
- Experts noted that more detailed information on the monitoring capacity can be found in the European projects DEVOTES and IRIS-SES. It has been also recommended to reform the questionnaires related to the monitoring capacity of biodiversity elements of the project IRIS-SES and send to the CPs.
- Some recommendations, taking in account the inventory of IRIS-SES project on the monitoring capacity, highlighted that coastal areas in EU countries are better covered mainly for the WFD biological elements, while many other of the components commonly associated with marine biodiversity assessment and monitoring are not covered by operational monitoring systems (e.g. coastal fish, mammals etc). The offshore sea is poorly sampled as also the MPAs.
- The PERSEUS project outcomes on the spatial coverage of oceanographic platforms (drifters, floats, gliders etc) and the under-sampled southern areas of the Mediterranean Sea were also recommended to be put in usage.

#### **Specific recommendations regarding indicators**

- A set of biotic and multimetric indices for benthic macroinvertebrates (zoobenthos), angiosperms and macroalgae, already used in the implementation of WFD, tested and validated to discriminate the GES/ no GES in the MED GIG exercise have been proposed;
- The benthic biotic indices can be applicable in a wider scale and type of habitats, and are sensitive to changes due to anthropogenic pressures, such as eutrophication and dredging/dumping. Indices based on coralligenous assemblages are also developed in the framework of CIGESMED project.
- Most current advances on methods for an integrative biodiversity assessment have been mentioned, such as the Baltic Sea-HELCOM Indicator based Tool for the assessment of Biodiversity Status (BEAT-2) developed under DEVOTES and HARMONY projects (Andersen et al., 2014) or the Marmoni Biodiversity Assessment Tool (<http://www.sea.ee/marmoni/index.php>), noting that also a large set of methods for

Biodiversity Integrated assessment are compiled within SCALES & DEVOTES projects (Borja et al., 2014);

- Fisheries were recommended as a resourceful provider for key data to be used for trophic level indices.

#### **Specific recommendations regarding data availability**

The lack of appropriate broad Mediterranean spatial datasets for most species and habitats has been stressed and it was recommended to further build on data of the :

- EUSeaMap which recently produced seabed habitat mapping of European seabed including the western part of the Mediterranean and EUSeaMap2 that has the objective of updating the Western Med map and producing the modelled benthic habitat for all the Mediterranean and the Black Sea and that is expected to be completed in 2016.
- The products of the EmodNet MedSea Checkpoint map key biodiversity elements in MPAs in the Mediterranean (also expected to be completed in 2016).
- The LifeWatch biodiversity database is now fast evolving in support of the research infrastructure needed for biodiversity assessment and monitoring in Europe.

#### **Specific recommendations on biodiversity assessment areas**

- Need to focus monitoring and assessment activities on pressured areas and the marine protected areas, especially SPAMIS in order to identify reference conditions and assess the management efficiency of the protected areas;
- Need to monitor fish biodiversity, combined with other taxa, (visual census was suggested) on the coastal fish assemblages, since these areas are beyond the data collecting area obtained from fisheries;
- Other key habitats such as lagoons, estuaries of the coastal zone have been proposed;
- Lack of knowledge of communities associated with seamounts and cold seeps have been stressed.

#### **Specific recommendations regarding the key interlinkages between pressures and impacts**

- The pressures impacting the Mediterranean habitats should be identified with emphasis on the main ones (more detailed pressure analysis is available in PERSEUS and IRIS-SES projects), which should be built on.

In addition, the experts also highlighted the need to strengthen science-policy interface and overall coordination for biodiversity research on a regional basis, with a possible strengthened/new coordination body. For more information on this point, please see (UNEP(DEPI)/MED WG 401/Inf.7).

## **II. INFORMAL ONLINE WORKING GROUP ON CONTAMINANTS**

### **Introduction**

In accordance with the decision taken at the 4th EcAp Coordination Group meeting held in Athens in October 2014, an on line expert group on Contaminants was established by the Contracting Parties with the co-leadership of Croatia and Spain, with support from the Secretariat (MED POL).

Based on the specific recommendations of the ECAP Correspondence Group on Monitoring (CORMON) Pollution and Litter, on Ecological Objectives 9 (UNEP(DEPI)/MED WG.411/Inf.3), and on the specific Terms of References of the Contaminants online working group (**the Contaminants Working Group**), the experts aimed to:

- 1) address and agree on common definitions on thresholds, baseline , assessment criteria etc.;
- 2) list, identify and review and analyze available data on contaminants in the Mediterranean;
- 3) gather eco-toxicological information on key marine species on a sub-regional level, compile this information in a report on the determination of EAC for CBs, PAHs and trace metals (Cd, Hg, Pb) in biota;
- 4) perform a statistical test to evaluate the precision of MED POL Monitoring Programmes (per country) in order to define the relationship between Background Concentration (BC) and Background Assessment Concentration (BAC) taking into consideration the variability of reported data on Certified Reference Materials (sediments and biota) used by Mediterranean Laboratories in proficiency tests and in inter-calibration exercises;
- 5) perform a quality control examination of the datasets in the MED POL database in order to better assess BAC values;
- 6) check if there is a significant trace metal concentration/size statistical dependency using the trend monitoring data in order to decide if normalization to organism size (age) is required.

Following consultations and joint work, the Contaminants Working Group delivered the first report which is presented as information document UNEP(DEPI)/MED WG 401/Inf.8. The report addresses the following issues:

- Review on common definitions on thresholds, baseline and assessment criteria for chemical contaminants and biological effect responses;
- Review the available data uploaded by contracting parties in the MED POL Info-Map platform on contaminants and biological effect responses in the MED in relation with EcAp indicators to perform calculations of BC and BACs for chemical contaminants and biomarkers;
- Identify gaps concerning Mediterranean dataset available to perform calculations of BC and BACs for chemical contaminants and biomarkers;
- Review the methodology and values considered by previous Mediterranean Experts to obtain the preliminary assessment criteria for hazardous substances in the Mediterranean (UNEP/MAP Athens 2011) but also by other expert groups (such as SGIMC-ICES/OSPAR) as well as those adopted recently by other Regional Conventions (for example OSPAR);
- Agree on what ACs (BAC, EAC, ERL, etc) could be adopted for the Mediterranean Region based on the work of other Regional Sea Conventions/regional expert groups;
- Based on the above, create common excel files.

Based on the first report of the Contaminants Working Group (UNEP(DEPI)/MED WG 401/Inf.8), the following draft recommendations are brought to the attention of the Integrated Correspondence Group Meeting on Monitoring, for discussions and as appropriate common agreement:

#### **Specific Recommendations of the Contaminants Working Group**

1. Adjustment of the definition to the Common indicator 12 as “Level of pollution effects of environmental contaminants on biological responses where a cause and effect can be explained”;
2. Indicate sampling methodology to follow to assess biological responses in the Main elements of the Draft Integrated Monitoring and assessment Programme (UNEP(DEPI)/MED WG 411/3);.
3. Amend the UNEP/MAP Technical Report Series No. 120 with particular reference to the sampling period for (case of fish) and sampling frequency (case of sediments);



4. Assess and discuss in coming years the convenience to normalise contaminant concentrations in samples from certain regions of the Mediterranean Sea (when Aluminium and Organic content data from sediments are available in MED POL database);
5. Consider Stress on Stress as a 1-tier biomarker in the Main elements of the Draft Integrated Monitoring and assessment Programme (UNEP(DEPI)/MED WG 411/3);
6. Indicate recommended fish biomarkers EROD activity, MN, AChE and PAH metabolites in bile to be taken into consideration for the coming years in view of the current scientific knowledge and state of the art in the Main elements of the Draft Integrated Monitoring and assessment Programme (UNEP(DEPI)/MED WG 411/3);
7. Follow the OSPAR approach of a “traffic light” system for both contaminant concentrations and biological responses, where there are two “thresholds”  $T_0$  and  $T_1$  to be defined (OSPAR, 2008; Davies et al., 2012);
8. Adopt BCs and BACs of contaminants in sediments obtained from the analysis of pre-industrial layers of dated sediment cores established for the Mediterranean region (UNEP(DEPI)/MED WG. 365/Inf.8);
9. Adopt existing EACs of contaminants in sediments and biota and of biological responses established by ICES/OSPAR until new ecotoxicological information is available (including Mediterranean species) (OSPAR, 2008; Davies et al., 2012);
10. Adopt new BCs and BACs of contaminants in sediments obtained by using data from sediments sampled at sites/areas which Mediterranean contracting parties consider being reference stations/areas ;
11. Adopt new BCs and BACs of contaminants in biota (mussels and fish) obtained by using only data from organisms sampled at sites/areas which Mediterranean contracting parties consider being reference stations/areas;
12. Adopt existing BACs and EACs of LMS, SoS, MN frequency and AChE activity biomarkers established (Davies et al., 2012);
13. Consider further discussion of new BACs of LMS, SoS, MN frequency and AChE activity biomarkers obtained by using data from organisms sampled at sites/areas which Mediterranean contracting parties consider being reference stations/areas;
14. Extend and amend the existing reporting formats used for contaminants and biological responses in MED POL database to avoid gaps of the information required and to facilitate the proper assessment of environmental criteria;
15. Continue support for the Contaminants expert group for long term developments of activities dedicated to chemical pollution, development of assessment.

### III. INFORMAL ONLINE WORKING GROUP ON EUTROPHICATION

#### Introduction

In accordance with the decision taken at the last ECAP Coordination Meeting held in Athens in October 2014, an on line working group on eutrophication (**Eutrophication Working Group**) was established by the Contracting Parties led by Greece with support from the Secretariat (MEDPOL Programme).

Following consultations and joint work, the Eutrophication Working Group delivered the first report which is presented as information document UNEP(DEPI)/MED WG 401/Inf.9. The report addresses the following issues:

- Propose common definitions on thresholds, baseline, assessment criteria as appropriate;
- identify and review available existing data, analyze data and their geographical and temporal differences (mean values, basin differences, trends, etc.);
- prepare concise tables of existing thresholds where identified based on data availability at national and regional levels;

- review the methods, the criteria and the limit values for assessing eutrophication in Mediterranean and its sub-regions and make relevant proposals.

Based on the first report of the Eutrophication Working Group (UNEP(DEPI)/MED WG 401/Inf.9), the following draft recommendations are brought to the attention of the Integrated Correspondence Group Meeting on Monitoring, for discussions and as appropriate common agreement:

### **Proposed thresholds and methodological criteria for eutrophication assessment in Mediterranean.**

#### **1. Typology scheme**

A considerable number of eutrophication experts have build a typology scheme for the Mediterranean during the first inter-calibration phase for the EU Water Framework Directive implementation which is still in use and represents a very simple typology approach that could be easily applied Mediterranean wide.

Typology is very important for further development of classification schemes of a certain area.

The recommended water types for applying eutrophication assessment is based on hydrological parameters characterizing a certain area dynamics and circulation. The typological approach is based on the introduction of a static stability parameter (derived from temperature and salinity values in the water column): such a parameter, on a robust numerical basis, can describe the dynamic behaviour of a coastal system. It is accepted that surface density is adopted as a proxy indicator for static stability as both temperature and salinity are relevant in the dynamic behavior of a coastal marine system. More information on typology criteria and setting is presented in document UNEP(DEPI)/MED WG 401/Inf.9.

On the basis of surface density and salinity values three major water types have been defined:

**Table 1**

	<b>Type I</b>	<b>Type II</b>	<b>Type III</b>
$\sigma_t$ (density)	<25	25<d<27	>27
salinity	<34.5	34.5<S<37.5	>37.5

The three different water types, in an ecological perspective, can be described as follows:

Type 1	coastal sites highly influenced by freshwater inputs
Type 2	coastal sites not directly affected by freshwater inputs
Type 3	coastal sites not affected by freshwater inputs

In addition, the splitting of the coastal water type 3 in two different sub basins, the Western and the Eastern Mediterranean ones, according to the different trophic conditions,, well documented in literature was also done. Some examples of Water Types presence finally defined for the European countries, Party to the Barcelona convention and LBS Protocol are shown in the Table 2.

**Table 2**

New types		Croatia	Cyprus	France	Greece	Italy	Slovenia	Spain
	Description							
<b>Type I</b>	Highly influenced by freshwater input			X		X		
<b>Type II</b>	Moderately influenced by freshwater input	X		X		X	X	X
<b>Type III WM</b>	Not influenced by freshwater input	X		X		X		X
<b>Type III EM</b>	Not influenced by freshwater input		X		X			

**Proposed recommendations**

1. Contracting parties are invited to agree on the proposed criteria for typology of waters as presented in table 1.
2. Contracting parties are invited to apply the above criteria and define their water types with the support from MEDPOL if needed, until end of May 2015.

**2. Thresholds and reference conditions for chlorophyll-a in the different water types**

Reference and threshold (Good/Moderate status) values differ from type to type on a sub-regional scale and were build with different strategies. Summaries values are given in table 3.

**Table 3**

Coastal waters Typology	Reference conditions of Chla ( $\mu\text{g L}^{-1}$ )		Boundaries of Chla ( $\mu\text{g L}^{-1}$ ) for G/M status	
	G_mean	90% percentile	G_mean	90% percentile
Type I	1.4	3.93	6.3	17.7
Type II-FR-SP		1.28		3.50
Type II-A Adriatic	0.33	0.8	1.5	4.0
Type II-B Tyrrhenian	0.32	0.77	1.2	2.9
Type III-W Adriatic			0.64	1.7
Type III-W Tyrrhenian			0.48	1.17
Type III_W FR-SP		0.79		1.89
Type IIIE		0.1		0.4

Note: The 90<sup>th</sup> percentile and the geometrical mean can be derived one from the other according to the following equation:  $\text{Chl-a } 90^{\text{th}} \text{ p.} = 10^{(\text{Log}_{10}(\text{G\_mean Chl-a}) + 1.28 \times \text{SD})}$ .

**Proposed recommendation**

1. The Contracting Parties are recommended to rely on the classification scheme on chl-a concentration ( $\mu\text{g/l}$ ) as a parameter easily applicable by all Mediterranean countries based on the indicative thresholds and reference values presented in table 3.

2. Following the evaluation of information provided by a number of countries and other available information it has to be noted that the Mediterranean countries are using different eutrophication assessment methods such as TRIX, Eutrophication scale, EI, HEAT, etc. These tools are very important to continue to be used at sub-regional or national levels because there is a long term experience within countries which can reveal / be used for assessing eutrophication trends.

#### **IV. INFORMAL ONLINE WORKING GROUP ON MARINE LITTER**

##### **Introduction**

In accordance with the decision taken at the 4th EcAp Coordination Group meeting held in Athens in October 2014, a an informal online working group on Marine Litter (**Marine Litter Working Group**) was established by the Contracting Parties led by France with support from the Secretariat (MEDPOL Programme).

Based on the specific recommendations of the ECAP Correspondence Group on Monitoring (**CORMON**) Pollution and Litter, on EO 10 (UNEP(DEPI)/MED WG.394/7, Annex I), the experts group had to:

1. address further differentiation of thresholds between heavily littered, moderately, and littered beach categories, if possible, based on available data,
2. consider thresholds and baseline values for floating litter, litter on the sea floor and floating micro plastics in each of the four MEDPOL sub-regions,
3. define thresholds and baseline values for litter digested by sea-turtles, recommended as the main approach of focus, while opportunistically considered for seabirds and marine mammals,
4. agree on litter categories specified for the Mediterranean Sea, considering compatibility with protocols from MSFD and other European regional seas, and finally (v) to explain the reason for omitting entanglement of litter as a common indicator.

Following consultations and joint work, the on line group delivered the first report which is presented as information document UNEP(DEPI)/MED WG 401/Inf.10. The report addresses the following issues:

- review the definitions (thresholds, baseline, assessment criteria, GES, etc.),
- review the available data on marine litter in the MED in relation with ECAP indicators (available data on beaches, at sea, of micro plastics and ingested litter),
- analyze data with consideration to geographical and temporal differences (mean values, basin differences, trends, etc.), and
- propose different scenario for thresholds and baseline values, based on various realistic parameters (mean values, minimum values, possible decrease vs time, etc.)

Based on the first report of the ML on line group UNEP(DEPI)/MED WG 401/Inf.10, the following draft recommendations are brought to the attention of the integrated CorrMon meeting for discussions and as appropriate common agreement:

## Proposed recommendations

### 1. Proposed baselines values (Rationale for this proposal presented in document UNEP(DEPI)/MED WG 401/Inf.11

Indicator	minimum value	maximum value	mean value	Proposed baseline
16. <b>Beaches</b> (items/100 m)	11	3600	920	<b>450-1400</b>
17. <b>Floating litter</b> (items/km <sup>2</sup> )	0	195	3.9	<b>3-5</b>
17. <b>Sea floor</b> (items/km <sup>2</sup> )	0	7700	179	<b>130-230</b>
17. <b>Microplastics</b> (items/km <sup>2</sup> )	0	892000	115000	<b>80000-130000</b>
18. <b>Sea Turtles</b> Affected turtles (%) Ingested litter(g)	14% 0	92.5% 14	45.9% 1.37	<b>40-60%</b> <b>1-3</b>

### 2. Categories of marine litter on the beaches

Regarding the categories of marine litter on the beaches, the Marine Litter Working Groups suggests that the CORMON should agree on a reduced list (desirably close to that in use in the others RSC), which would include the items more frequently found on the Mediterranean beaches, avoiding those that are found rarely. Moreover, the lists of litter categories considered in countries having monitoring programs dedicated to two RSC (e.g. Turkey, France or Spain) would need harmonization. For this, the MSFD derived MEDPOL list is now compatible with other RSC lists of beach litter categories.

With regards to the MSFD form presented in the Marine litter chapter integrated monitoring programme document UNEP(DEPI)/MED WG 401/3, it is proposed to merge some types of beach litter (e.g. different types of plastic drink bottles or different types of caps/lids and rings, etc.), split glass and ceramic items categories, consider the sanitary and medical wastes as a separate category and not to include several specific items that have not appeared in the running Mediterranean countries monitoring programmes (e.g. Spanish Monitoring Program on beach marine litter, implemented from 2013 in the Mediterranean). In addition, the online group proposes to use for surveys a minimum lower limit of particle size at 0.5 cm (upper size of microlitter); UNEP(DEPI)/MED WG 401/3

**3. Proposed Marine litter environmental targets:**

<b>EcAp Indicators</b>	<b>Type of Target</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Recommandation</b>	<b>Remark</b>
<b>Beaches (EI16)</b>	% decrease	significant	30	20% by 2025	Not 100% marine pollution
<b>Floatin Litter (EI 17)</b>	% decrease	-	-	Statistically Significant	sources are difficult to control (trans border movements)
<b>Sea Floor Litter (EI 17)</b>	% decrease	stable	10% in 5 years	Statistically Significant	15% in 15 years is possible
<b>Microplastics (EI 17)</b>	% decrease	-	-	Statistically Significant	sources are difficult to control (trans border movements)
<b>Ingested Litter (EI 18)</b>					Movements of litter and Animals to be considered
Number of turtles with ingested litter (%)	% decrease in the rate of affected animals	-	-	Statistically Significant	
Amount of ingested litter	% decrease in quantity of ingested weight(g)	-	-	Statistically Significant	

4. Other recommendations

<b>SCALE</b>	<b>Common baselines</b> for the various EI (16, 17, 18) must be considered at the level of the entire basin (Mediterranean) rather than at sub regional level
<b>RESEARCH</b>	Need to <b>define an adapted protocol for microplastics in sediments</b>
	Research to <b>support the development of an indicator dedicated to entanglement</b>
<b>BASELINES/TARGETS</b>	<b>Consider specific baselines and targets</b> for litter categories that are individually targeted by reduction plans or measures by the Contracting Parties (cigarette butts, plastic bags, cotton buds, etc)
<b>CATEGORIES</b>	<b>Consider the reduction of the number of categories</b> in MEDPOL monitoring protocol
	<b>Adapt MEDPOL master list</b> , MSFD derived, to harmonize with other RSC
<b>MONITORING</b>	<b>Needs for adjustment of the monitoring guidance</b> (more compatible definitions and wording, list of items/categories)
	<b>Harmonization</b> of the on line group report with the ECAP monitoring guidance for Marine Litter
<b>SUPPORT</b>	
<b>MONITORING</b>	<b>Consider the relevance of ML for monitoring marine pollution</b> (lower costs, possible harmonization, easy protocols), especially on beaches, when compared with other approaches (e.g. analysis of contaminants)
	<b>Support evaluation/adjustments of baselines/targets</b> on the basis of the first monitoring results
	Improve knowledge on experimental indicator EI 18, <b>Support capacity building and monitoring experiment on sea turtles at a pilot scale</b>
<b>QUALITY ASSURANCE</b>	As the Mediterranean Action Plan on ML is based on measures and monitoring <b>efforts should be shouldered by quality control/quality assurance</b> (training, inter-comparisons, use of reference material for microplastics, etc.) to assist survey teams.
<b>DATA MANAGEMENT</b>	<b>Data base is to be organized</b> for the collection of data
<b>Secretariat</b>	Continue support for the ML <b>expert group</b> for long term developments of activities dedicated to Marine Litter, trends analysis and analysis of data from countries (art 11 of the MLRP)
	Consider <b>capacity building</b> in long term, in support of the MLRP (training, inter-calibrations, etc.)





**Annex I**  
**Proposed habitats and species lists**



## HABITATS

ZONE	HABITATS	ADDITIONAL INFORMATION (Invertebrates associated with habitats)	
Pelagic oceanic	Upwelling areas	Jellyfish population dynamics and blooms; HABs	
	Fronts		
	Gyres		
Pelagic neritic			
Benthic Infralittoral (photophilic, 0-50m)	Rocky	Hard beds (bottoms, substrates, reefs) associated with communities of photophilic algae, notably	
		Certain <i>Cystoseira</i> belts (distinctive <i>Cystoseira</i> meadows in the mediolittoral and shallow infralittoral)	e.g. and <i>Sargassum vulgare</i>
		Overgrazed barren areas (due to overgrazing by sea urchins or invasive herbivorous fish)	
		Communities in the mediolittoral and infralittoral that are based on bio-construction, notably	e.g. <i>Lithophyllum</i> spp
		facies with vermetids (vermetid reefs)	e.g. <i>Dendropoma paetrum</i> , <i>Cladocora</i> , <i>Astroides calicularis</i> , facies of coralligenous, <i>Lithophyllum</i>
	Sedimentary	Seagrass meadows ( <i>Posidonia oceanica</i> , <i>Cymodocea nodosa</i> , <i>Zostera</i> sp), notably	e.g. <i>Pinna nobilis</i> , <i>Asterina pancerii</i> and <i>Caulerpa</i> spp
		Barrier reefs of <i>Posidonia</i> sp.	
		Infralittoral sands or muddy sands	
	Benthic Circalittoral (sciaphilic, 50-200m)	Rocky	Hard bottom habitats associated with coralligenous communities and semi dark caves, deep reefs (dominated by sponges and other filter feeders)
Communities of the coastal detritic bottom / Maërl communities / Coralligenous communities			e.g. <i>Lithothamnion corallioides</i> , <i>Phymatolithon calcareum</i> , facies of macroalgae <i>Laminaria rodriguezii</i> , <i>Osmundaria</i> and <i>Peysonnelia</i>
Sedimentary		Biocoenosis of coastal terrigenous muds	
		Communities of shelf-edge detritic bottoms (facies with <i>Leptometra phalangium</i> )	
Benthic Bathyal (dark, >200 m)		Communities of deep-sea corals	e.g. facies with <i>Lophelia pertusa</i> , <i>Madrepora oculata</i>
		Seeps and communities associated with bathyal muds (facies with <i>Isidella elongata</i> )	e.g. facies with <i>Funiculina quadrangularis</i>
		Communities associated with seamounts	

## FISHES

GROUP	SPECIES/FAMILIES	ADDITIONAL INFORMATION
FISHES	Blenniidae	coastal
	<i>Epinephelus</i> spp.	
	Gobiidae	
	Labridae	
	Serranidae	
	Sparidae	
	<i>Acipenser naccarii</i> (Bonaparte, 1836)	
	<i>Acipenser sturio</i> (Linnaeus, 1758)	
	<i>Aphanius fasciatus</i> (Valenciennes, 1821)	
	<i>Aphanius iberus</i> (Valenciennes, 1846)	
	<i>Carcharias taurus</i> (Rafinesque, 1810)	
	<i>Carcharodon carcharias</i> (Linnaeus, 1758)	
	<i>Cetorhinus maximus</i> (Gunnerus, 1765)	
	<i>Dipturus batis</i> (Linnaeus, 1758)	
	<i>Galeorhinus galeus</i> (Linnaeus, 1758)	
	<i>Gymnura altavela</i> (Linnaeus, 1758)	
	<i>Hippocampus guttulatus</i> (Cuvier, 1829)	
	<i>Hippocampus hippocampus</i> (Linnaeus, 1758)	
	<i>Huso huso</i> (Linnaeus, 1758)	
	<i>Isurus oxyrinchus</i> (Rafinesque, 1810)	
	<i>Lamna nasus</i> (Bonnaterre, 1788)	
	<i>Lethenteron zanandreae</i> (Vladykov, 1955)	
	<i>Leucoraja circularis</i> (Couch, 1838)	
	<i>Leucoraja melitensis</i> (Clark, 1926)	
	<i>Mobula mobular</i> (Bonnaterre, 1788)	
	<i>Odontaspis ferox</i> (Risso, 1810)	
	<i>Oxynotus centrina</i> (Linnaeus, 1758)	
	<i>Polyprion americanus</i> (Bloch & Schneider, 1801)	
	<i>Pomatoschistus canestrini</i> (Ninni, 1883)	
	<i>Pomatoschistus tortonesei</i> (Miller, 1969)	
	<i>Pristis pectinata</i> (Latham, 1794)	
	<i>Pristis pristis</i> (Linnaeus, 1758)	
	<i>Rhinobatos cemiculus</i> (E. Geoffroy Saint-Hilaire, 1817)	
	<i>Rhinobatos rhinobatos</i> (Linnaeus, 1758)	
	<i>Rostroraja alba</i> (Lacépède, 1803)	
	<i>Siganus luridus</i> (Rüppell, 1829)	
	<i>Siganus rivulatus</i> Forsskål & Niebuhr, 1775	
	<i>Sphyrna lewini</i> (Griffith & Smith, 1834)	
	<i>Sphyrna mokarran</i> (Rüppell, 1837)	
<i>Sphyrna zygaena</i> (Linnaeus, 1758)		
<i>Squatina aculeata</i> (Dumeril, in Cuvier, 1817)		
<i>Squatina oculata</i> (Bonaparte, 1840)		
<i>Squatina squatina</i> (Linnaeus, 1758)		
<i>Valencia hispanica</i> (Valenciennes, 1846)		
<i>Valencia letourneuxi</i> (Sauvage, 1880)		

## MAMMALS

<b>The five first ceataceans are proposed to be monitored. The rest are optional</b>		
<b>GROUP</b>	<b>SPECIES</b>	<b>ADDITIONAL INFORMATION</b>
<b>MAMMALS</b>	<i>Balaenoptera</i> spp.	
	<i>Delphinus delphis</i> (Linnaeus, 1758)	
	<i>Monachus monachus</i> (Hermann, 1779)	
	<i>Physeter macrocephalus</i> (Linnaeus, 1758)	
	<i>Tursiops truncatus</i> (Montagu, 1821)	
	<i>Stenella coeruleoalba</i> (Meyen, 1833)	
	<i>Globicephala melas</i> (Trail, 1809)	
	<i>Grampus griseus</i> (Cuvier G., 1812)	
	<i>Ziphius cavirostris</i> (Cuvier G., 1832)	

**SEABIRDS**

<b>GROUP</b>	<b>SPECIES</b>	<b>ADDITIONAL INFORMATION</b>
<b>SEABIRDS</b>	<i>Larus audouinii</i> (Payraudeau, 1826)	
	<i>Phalacrocorax aristotelis</i> (Linnaeus, 1761)	
	<i>Puffinus</i> spp.	<i>Puffinus mauretanicus</i> (Lowe, PR, 1921), <i>Puffinus yelkouan</i> (Brünnich, 1764)
	<i>Sterna</i> spp.	<i>Sterna albifrons</i> (Pallas, 1764) or <i>Sterna nilotica</i> (Gmelin, JF, 1789) or <i>Sterna sandvicensis</i> (Latham, 1878)

**REPTILES**

<b>GROUP</b>	<b>SPECIES</b>	<b>ADDITIONAL INFORMATION</b>
<b>REPTILES</b>	<i>Caretta caretta</i> (Linnaeus, 1758)	
	<i>Chelonia mydas</i> (Linnaeus, 1758)	

**Non Indigenous Species**

GROUP	SPECIES	ADDITIONAL INFORMATION
<b>Non Indigenous Species</b>	<i>Fistularia commersonii</i> Rüppell, 1838	fish
	<i>Lagocephalus sceleratus</i> (Gmelin, 1789)	fish
	<i>Plotosus lineatus</i> (Thunberg, 1787)	fish
	<i>Pterois miles</i> (Bennett, 1828)	fish
	<i>Siganus luridus</i> (Rüppell, 1829)	fish
	<i>Siganus rivulatus</i> Forsskål & Niebuhr, 1775	fish
	<i>Callinectes sapidus</i> Rathbun, 1896	crustacea
	<i>Penaeus japonicus</i> Spence Bate, 1888	crustacea
	<i>Percnon gibbesi</i> (H. Milne Edwards, 1853)	crustacea
	<i>Arcuatula senhousia</i> (Benson in Cantor, 1842)	mollusca
	<i>Chama pacifica</i> Broderip, 1835	mollusca
	<i>Pinctada imbricata radiata</i> (Leach, 1814)	mollusca
	<i>Rapana venosa</i> (Valenciennes, 1846)	mollusca
	<i>Spondylus spinosus</i> Schreibers, 1793	mollusca
	<i>Spirorbis (Spirorbis) marioni</i> Caullery, Mesnil, 1897	polychaeta
	Branchiomma spp.	polychaeta
	<i>Asparagopsis taxiformis</i> (Delile) Trevisan de Saint-Léon	macroalgae
	<i>Bonnemaisonia hamifera</i> Hariot	macroalgae
	<i>Caulerpa cylindracea</i> Sonder	macroalgae
	<i>Codium fragile</i> (Suringar) Hariot	macroalgae
	<i>Lophocladia lallemandii</i> (Montagne) F.Schmitz	macroalgae
	<i>Styopodium schimperi</i> (Kützing) M.Verlaque & Boudouresque	macroalgae
	<i>Didemnum vexillum</i> Kott, 2002	Ascidiacea
	Microcosmus spp.	Ascidiacea
<i>Oculina patagonica</i> de Angelis, 1908	Cnidaria	
<i>Rhopilema nomadica</i> Galil, 1990	Cnidaria	