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Agenda Item 5: Specific Matters for Consideration and Action by the Meeting, including draft Decisions

First elements to elaborate the List of Reference of Pelagic Habitat Types in the Mediterranean Sea

UNEP/MAP
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Note by the Secretariat

The Protocol concerning Specially Protected Areas and Biological Diversity in the Mediterranean and the Action plan for the Protection of the Marine Environment and the Sustainable Development of the Coastal Areas of the Mediterranean (MAP Phase II), adopted by the Contracting Parties to the Barcelona Convention in 1995, contain provisions for the preparation of inventories at national as well as regional level.

At their 10th Ordinary Meeting (Tunis, 18-21 November 1998), the Contracting Parties to the Convention for the Protection of the Mediterranean Sea against Pollution adopted common criteria for the preparation of national inventories of natural sites of conservation interest. The criteria provided for the establishment of a reference list of marine and coastal natural habitat types, to be drafted on the basis of a model classification. At the same Meeting the Contracting Parties invited the Regional Activity Centre for Specially Protected Areas (SPA/RAC) to work on the elaboration of a model classification of marine habitat types for the Mediterranean region, as well as a reference list of habitat types.

The COP 11 (Malta, 27-30 October 1999) adopted the Classification of benthic marine habitat types for the Mediterranean region and the Reference List of Marine Habitat Types for the Selection of Sites to be included in the National Inventories of Natural Sites of Conservation Interest. It recommended to work on the elaboration of a classification of habitats for the pelagic environment and invited SPA/RAC to organize to this end a working group of experts.

Since a classification of pelagic habitat types will assist efforts to implement much-needed ecosystem-based management in open and deep seas, SPA/RAC presented to the Eleventh Meeting of Focal Points for SPAs (Rabat, Morocco, 3-4 July 2013) a document entitled “Towards the Identification and Reference List of Pelagic Habitat Types in the Mediterranean Sea”. The document was welcomed and encouraged continuing work to establish the exhaustive reference list.

At their 21st Ordinary Meeting (Tirana, Albania, 17-20 December 2019), the Contracting Parties, requested SPA/RAC to identify the first elements for elaborating the list of Reference of Pelagic Habitat Types in the Mediterranean Sea with a view to submitting them to the Contracting Parties at their 22nd Ordinary Meeting (Decision IG.24/14).

In this context, the present document was presented for review and discussion by the SPA Focal Points with the view of proposing recommendations concerning the way forward to develop a comprehensive reference list of pelagic habitat types in the Mediterranean region.

Introduction: Complexity of pelagic habitat characterisation

1. Pelagic habitats cover the 71% of Earth's surface and play an essential role in regulating temperature on land, producing oxygen and food. They are also a management challenge where the alterations of their physical, chemical and biological characteristics negatively impact their ecosystem functioning and services (e.g. provisioning services).

2. The habitat classification system aims to provide a common reference set of habitat types within a hierarchical classification, and to cover all terrestrial, freshwater and marine habitats. The classification facilitates reporting of habitat data in a comparable manner, for use in nature conservation (e.g. inventories, monitoring and assessments), habitat mapping and environmental management.

3. Benthic habitats can be considered as fixed (although boundaries of some such habitats can slowly move in response to environmental change and human-induced disturbance), can be taken as proxies for biodiversity hotspots which are normally associated with such habitats, and that might warrant protective efforts. Accordingly, disposing of a reference list of benthic habitats makes mapping possible, and, in turn, facilitates conservation action.

4. The situation is radically different when dealing with pelagic habitats which refer to an ecological area of the whole water-column and, specifically hereafter, to species-specific water depths. Pelagic habitats are characterized by biotic factors (chlorophyll fronts chlorophyll content and nutrient fronts), seen as a proxy for marine primary productivity, and abiotic factors (temperature, current velocity, Water column stratification, mixed layer depth, light, nutrients and oxygen concentrations in the water column) which are perceived as physical constraints for species.

5. Furthermore, unlike the benthos, the pelagic realm is tri-dimensional, difficult to inspect, mostly located far from land, and although consisting of a wide variety of combinations of physical and chemical characteristics which creates different habitats that marine species readily react to, such habitats cannot be detected by humans without the assistance of sophisticated instrumentation.

Characterisation of pelagic habitats

6. Mediterranean Sea circulation is complex and its interaction with biological processes defines a variety of marine pelagic habitats, from the surface to the deeper waters. Offshore waters are typically considered as oligotrophic, or nutrient poor. Nevertheless, the enrichment of surface layers is assured by upwelling and water mixing, by the concentration and retention of nutrients by eddies and front action. All these oceanographic features determine favorable conditions both for primary production and for the autotrophic and heterotrophic microbial processes. Microbial food webs exceed a thousand times over the production of the "classic food web" (phytoplankton zooplankton-fishes) which "can now be considered as a variable phenomenon in a sea of microbes" (Fabi and *al*, 2018, Wurtz, 2010), thus enhancing the ecosystem's carrying capacity.

7. Furthermore, reduced continental shelves, steep slopes, canyons and seamounts accelerate through space and time the energy flow and the turnover from the sea bottom to the surface, as well as from coastal to pelagic waters (and vice versa). The presence and abundance of top predators in relation to specific topographic and oceanographic structures seem to confirm this new scenario of pelagic productivity (Wurtz, 2010). Studies have suggested that odontocetes, for example sperm whales, feeding mainly on deep squids, are commonly associated with topographic structures such as canyons and submarine mountains, while mysticetes, e.g. fin whales feeding on plankton, aggregate on thermal fronts or convergent structures rich in zooplankton (Fabi and *al*, 2018).

8. Upper–trophic level predators (top predators) feeding, and breeding grounds frequently represent biodiversity hotspots, associated with topographic and oceanographic features. Therefore, using the upper–trophic level predators (top predators) as indicators of the ecosystem status and performances

may be considered from the point of view of cost-benefit ratio. Their distribution and aggregation may be effectively used in pelagic habitat mapping, even if a whole-system approach could be the proper strategy and the top predators approach could be part of a set of insights and interpretations used for management measures (Fabi and *al*, 2018).

Selection of Sites to be Included in the National Inventories of Natural Sites of Conservation Interest in the Mediterranean

9. Water column habitats are generally referred to as 'pelagic' habitats which include the water column and all the organisms that inhabit it. In accordance with UNEP/RAC/SPA (2013) , two zones of pelagic habitats are identified: - the neritic zone – also known as coastal zone - which is the portion of the ocean lying above the continental shelf (i.e., extending from the low tide mark to the location corresponding to the continental shelf break - around a depth of 200 m); and - the oceanic zone – also termed the open ocean or open sea - which extends away from the coast beyond the shelf break. Water column habitats are largely dependent on movements of the water masses and the complex interactions between biological and physical processes.

10. For this reason, water column habitats can be classified differently at different times of the year to integrate the seasonality of plankton communities. For example, in the case of Malta such classification would depend on the hydrodynamics in the area, which are mainly dictated by the general flow in the Sicilian Channel, and thermal stratification of the water column that characterises the Mediterranean basin.

11. The following initial draft reference list for the epipelagic layer (0-200m) was elaborated by UNEP/SPA/RAC (UNEP/RAC/SPA, 2013).

A. Epipelagic layer (0 – 200 m):

A.1.	Reduced salinity water	coastal lagoons
A.2.	Variable salinity water - high surface CHL (>3 mg/m^3)	estuaries, river plumes
A.3.	Marine water: neritic - medium surface CHL (0.5-3 mg/m^3)	upwellings, re-suspension in shallow waters and outskirts of river plumes
A.4.	Marine water: oceanic - medium surface CHL (0.5-3 mg/m^3)	upwellings
A.5.	Marine water: oceanic - low surface CHL (~0.1-0.5 mg/m^3)	chlorophyll-a fronts (whatever type of horizontal gradient of CHL, thus including e.g. gyres)
A.6a.	Marine water: oceanic - very low surface CHL (<0.1 mg/m^3) with subsurface CHL maximum	euphotic depth > mixed layer depth
A.6b.	Marine water: oceanic - very low surface CHL (<0.1 mg/m^3) without subsurface CHL maximum	euphotic depth < mixed layer depth

12. Proposing a reference list of pelagic habitats in the mesopelagic, bathypelagic and abyssopelagic layers (200 – 6,000 m) is far more challenging for the reasons discussed in the previous pages particularly considering the complex structuring and dynamics of the different Mediterranean water masses and are not systematically sampled. Fortunately, these layers are much less relevant for the species selected for the EcAp process: birds are not known to venture below epipelagic depths, and also loggerhead and green turtles normally remain in the upper 10s of m in the water column. Many cetaceans dive to mesopelagic waters, and some even beyond, however these dives are performed in search of food, and the animals are forced to return to the surface in a range of 10s-100s of minutes after the beginning of their dives.

13. Clearly, identifying and classifying pelagic habitat types beyond the epipelagic layer is a very complex task requiring a good understanding of the interplay between abiotic (i.e., depth, temperature, salinity and currents) and biotic factors, and of the time and space scales involved in such interplay.

14. Therefore, it is recommended that an effort of compiling a reference list of Mediterranean pelagic habitat types be achieved through in-depth multidisciplinary expert consultations. However,

considering the importance of the inventory of pelagic habitats for the conservation of vulnerable pelagic species as well as for the sustainable exploitation of pelagic fishing stocks, close collaboration with relevant regional organisations is strongly recommended for the compilation of the reference list. A recent work by Ayata et *al.* (2017), proposed a synthesis of the many recent regionalisations of the open-sea regions of the Mediterranean Sea. The nine studies considered in this study defined regions based on different, and sometimes complementary, criteria: dynamics of surface chlorophyll concentration, ocean currents, three-dimensional hydrological and biogeochemical properties, or the distribution of organisms. Although they identified different numbers and patterns of homogeneous regions, their compilation in the epipelagic zone identified nine consensus frontiers, eleven consensus regions with relatively homogeneous conditions, and four heterogeneous regions with highly dynamical conditions. The consensus frontiers and regions are in agreement with well-known hydrodynamical features of the Mediterranean Sea, which constrain the distribution of hydrological and ecological variables. The heterogeneous regions are rather defined by intense mesoscale activity. The synthesis proposed here could constitute a reference step for management actions and spatial planning, such as the application of Ecosystem Approach and the European Marine Strategy Framework Directive, and for future biogeochemical and ecological studies in the Mediterranean Sea

Links to the Ecosystem Approach Roadmap

15. Characterisation of pelagic habitats in the Mediterranean is necessary for the implementation of the Ecosystem Approach (EcAp) roadmap and its Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP) in particular for the preparation of the MedQSR 2023.

16. According to Magliozzi, 2021, pelagic habitat types are identified, in the EU Marine Strategy Framework Directive (MSFD), horizontally by considering the distance from shore. The four broad habitat types cover two main zones: i) the neritic, which includes variable salinity and coastal habitats, and ii) the oceanic, which extents away from coast and refers to the shelf and oceanic/beyond shelf habitats. This is a common approach when classifying pelagic ecosystems, it requires focusing on specific mechanisms that underlie Good Environmental Status (GES) and thus support concrete outcomes. To date, different hydro-biogeochemical models exist that describe the pelagic habitats across European marine regions (i.e., Baltic Sea, North-East Atlantic Ocean, Mediterranean Sea, Black Sea). Vertical delimitation of pelagic habitats would consider from surface to seabed in seasonal thermoclines seas or from surface to the hypoxic layer in permanent halocline areas (e.g. the Baltic and Black Seas) where the hypoxic sub-layer is considered resilient to changes in the time scale of action of the MSFD (few years).

17. The EU MSFD requires that European Member States that share a marine region or sub-region cooperate when developing their marine strategies (CEC, 2008). In this respect, Regional Sea Conventions, like OSPAR, HELCOM and Barcelona Convention, take a key role as a platform for EU Member States to coordinate their approaches in implementing the MSFD at a regional scale (Rombouts and *al*, 2019).

18. A common approach to estimate pelagic environmental status is to look for plankton community changes. In this approach, abundance, biomass and diversity are often considered as proxies for processes controlling the pelagic physical and biological systems (e.g. eutrophication) and as they allow to have an integrated view of pelagic habitats combining standing stocks, groups and diversity. Generally, the biological communities are assessed by three categories of indicators depending on the targeted taxa: phytoplankton-only, zooplankton-only, and combined phyto- and zooplankton. There are advantages and disadvantages depending on the category and metric addressed by each indicator.

19. Within the OSPAR Regional Sea Convention, marine phytoplankton and zooplankton community indicators are developed to assess the Environmental Status of Pelagic Habitats. Pelagic Habitat indicator 1 (PH1) “Changes in phytoplankton and zooplankton communities” uses the relative changes in abundances of lifeform pairs based on functional traits to indicate ecological change. For example,

in the pairing of diatoms and dinoflagellates, the dominance of the latter could indicate eutrophication resulting in less desirable food webs. Pelagic Habitat indicator 2 (PH2) "Changes in Phytoplankton Biomass and Zooplankton Abundance" provides an indication of deviations in total phytoplankton biomass or abundance of zooplankton from the assumed natural variability in time-series. Finally, Pelagic Habitat indicator 3 (PH3) identifies changes in the community structure using taxonomic diversity indices. However, for a more robust assessment of pelagic habitats, other measures such as total biomass / abundance of the community and information on functional groups should be included so that a multi-metric indicator could be developed. These three common indicators consider plankton communities at different organizational levels: PH2 at the broadest organizational level since it considers total phytoplankton biomass and total copepod abundance, PH1 at an intermediate level since it considers lifeform pairs, and PH3 at the finest level of organization, if possible, down to the species level (Rombouts et *al*, 2019).

20. The use of plankton indicators in the Mediterranean Sea refers mostly to pelagic habitats in coastal waters and to case studies connected with environmental pressures, e.g. in the Adriatic, Aegean etc. Regional conventions (OSPAR, HELCOM, Barcelona and Bucharest Conventions) have long considered phytoplankton as a key element for integrated assessment systems. Phytoplankton biomass, community composition, abundance, frequency and intensity of blooms are used for such assessment purposes. Regarding zooplankton communities, commonly used indicators have a taxonomic base while recently size structure and biomass can provide a valuable index of zooplankton population dynamics and ecosystem production. Jellyfish blooms' occurrence and frequency are also considered important zooplankton indicators in specific areas, e.g. North Adriatic (Varkitzi and *al*, 2018).

21. Following Varkitzi and *al*, 2018, a variety of phytoplankton indicators can be found in the scientific literature, webpages, different projects reports and deliverables, which have been developed and/or used at the Mediterranean Sea level, all aiming to assess the status of the marine environment. The use of a combination of multiple phytoplankton related parameters is encouraged by the scientific community. Also, information on the zooplankton communities, including the species composition/distribution and seasonal/geographical variability, provide a relevant contribution to the definition of GES for various MSFD Descriptors (e.g. D1, D2 and D4). There is considerable scientific and practical interest in understanding how the biological components of marine systems respond to both single and multiple stressors. The response of zooplankton to environmental conditions is of particular interest due to the central and mediating role that this group occupies as a trophic link between planktonic primary producers and larger consumers.

22. In 2016 the Barcelona Convention adopted the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP) (UNEP/MAP, 2017). IMAP describes the strategy, themes, and products that the Contracting Parties are aiming to deliver over the second cycle of the implementation of the Ecosystem Approach Process (EcAp process 2016-2021), in order to assess the status of the Mediterranean Sea and coast.

23. One of the main outcomes of this process is that IMAP covers the Ecological Objectives related to Biodiversity (EO1) in accordance with D1 of MSFD. Among the existing five Biodiversity common indicators, there are only two related to pelagic habitats, namely:

- the Common indicator 1: Habitat distributional range (E01) to also consider habitat extent as a relevant attribute, and
- the Common indicator 2: Condition of the habitat's typical species and communities (E01).

24. To provide representative sites and species to include in the monitoring programs, a reference list of species and habitats is presented in Annex 1 of the IMAP document (UNEP/MAP, 2017). The Contracting Parties need to include the monitoring of the reference list species and habitats within at least two monitoring areas in their national monitoring programmes, one in a low-pressure area and one in a high-pressure area from human activity. Key features from this Annex related to pelagic habitats are listed in Table 1.

Predominant habitat or "Functional" group of species	Specific habitat type or species to be monitored	Additional information: specific representatives species or habitats	Assessment monitoring scale
Water column - coastal waters	Coastal waters phytoplankton communities	HABs	national/regional
Water column - coastal waters	Coastal waters zooplankton communities	cf. jellyfish population dynamics and blooms	national/ sub-regional
Water column - shelf and oceanic waters	Shelf and oceanic waters phytoplankton communities	HABs	Sub-regional
Water column - shelf and oceanic waters	Shelf and oceanic waters zooplankton communities	cf. jellyfish population dynamics and blooms	Sub-regional

Table 1: Reference list of species and habitats from Annex 1 of the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP) (UNEP/MAP, 2017).

25. Besides in the Biodiversity Ecological Objective, phytoplankton biomass is largely considered under the EO5 Eutrophication with the Common Indicator 14: Chlorophyll a concentration in water column (UNEP/MAP, 2017). The common indicator could contribute to assessments for pelagic habitats under EO1 as the distribution and an estimate of the area that is subject to eutrophication in the water column. In fact, Chlorophyll a still remains the most widely used indicator mostly thanks to its time saving, cost-effective and reproducible analytical methods that provide easily comparable datasets (Varkitzi and *al*, 2018). To focus on small sized phytoplankton communities (that could be monitored via flow-cytometry or HPLC) is recommended (Varkitzi and *al*, 2018).

26. Our knowledge of the pelagic habitats for the Mediterranean Sea is generally limited to coastal areas for which several long-term monitoring stations exist for both zooplankton and phytoplankton (Long term survey are scarcer for zooplankton than for phytoplankton). Our knowledge for the open sea is scarcer and less studied and to our knowledge, no available nor operational indicators have been developed in the deep Mediterranean Sea. Satellite data and associated modelling chl-a regionalization are available, which can be used for the already developed OSPAR pelagic indicator which can be adapted to the Mediterranean (OSPAR, 2017). This data can be used as well for Ecological Objective 5 on Eutrophication.

27. The water column components phytoplankton and zooplankton are covered by fewer indicators in the Mediterranean than in other regional seas, e.g. Black Sea, Baltic Sea and NE Atlantic Ocean. However, many phytoplankton and zooplankton indicators could be used as “early warning indicator, because of their ability to respond quickly to environmental changes and give feedback about changes happening in the food webs and ecosystems.

Conclusion:

28. The pelagic environment includes a continuum of mixing and transport depending on the interaction of multiple drivers acting on different spatial and temporal scales. Pelagic physical processes vary spatially with seabed features (e.g. high productivity for seamounts upwelling) and major currents and fronts, and temporally with, for example, wind-driven upwelling. As a result, biota responses would depend on and vary with these hydrographic factors Which themselves are driven by hydro-climatic factors at larger scale.

29. The elaboration of a classification of pelagic habitat types for the Mediterranean requires a multidisciplinary approach and the availability of data for the parameters governing the dynamics of water masses and the species inhabiting the water column. Such data are not available in many portions of the Mediterranean Sea. The process for elaborating the reference list of pelagic habitats in the Mediterranean needs therefore a preparatory phase to prepare an inventory of existing data and methodologies allowing to define pelagic habitats units in terms of hydrography, ecology considering the spatial and temporal variations. The work of Tew-Kai et al (2020) could be a good starting Point.

30. However, characterisation of pelagic habitats in the Mediterranean is needed in a near future for the implementation of the Ecosystem Approach (EcAp) roadmap and its Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP) in particular for the preparation of the MedQSR 2023.

31. It is therefore recommended to establish a multidisciplinary group of experts to undertake the following tasks:

In relation to IMAP:

- Define parameters allowing to use phytoplankton and zooplankton for relevant IMAP biodiversity indicators,
- Propose a classification of pelagic habitat types in the epipelagic layer (0-200) using inter alia satellite-based chlorophyll-a data as a proxy of pelagic biodiversity as proposed in UNEP/RAC/SPA, 2013, the outpouts of the French research program “Marine Ecosystems Response in the Mediterranean Experiment” the MerMex project and the work of Tew-Kai et al (2020).

In relation to the elaboration of the pelagic habitat types of the classification for the Mediterranean:

- Compile an inventory of existing data and methodologies, including modelling approaches, allowing to define Mediterranean pelagic habitats units in terms of hydrography, ecology taking into account the spatial and temporal variations (MerMex project) .
- Define the Mediterranean pelagic habitats units that could be used for defining a pelagic habitat types classification. This task is to be implemented, on a pilot scale, in a limited portion of the Mediterranean Sea with sufficient data about the relevant parameters taking into account The work of Tew-Kai et al (2020)

References

1. Fabri Marie-Claire, Brind'Amour Anik, Jadaud Angelique, Galgani Francois, Vaz Sandrine, Taviani Marco, Scarcella Giuseppe, Canals Miquel, Sanchez Anna, Grimalt Joan, Galil Bella, Goren Menachem, Schembri Patrick, Evans Julian, Knittweis Leyla, Cantafaro Anna-Lucia, Fanelli Emanuela, Carugati Laura, Danovaro Roberto (2018). Review of literature on the implementation of the MSFD to the deep Mediterranean Sea. IDEM project, Deliverable 1.1. 228 p. www.msfd-idem.eu.http://doi.org/10.13155/53809
2. HELCOM, 2017a. Diatom/Dinoflagellate index. HELCOM pre-core indicator report. Online. 16 Nov 2017. http://www.helcom.fi/baltic-sea-trends/indicators/Diatomdinoflagellate-index.
3. HELCOM, 2017b. Status of development of pre-core and candidate indicators (4J-7). Working Group on the State of the Environment and Nature Conservation. 15-19 May 2017. https://portal.helcom.fi/meetings/STATE%20-%20CONSERVATION%206-2017412/MeetingDocuments/4J-7%20Status%20of%20development%20of%20precore%20and%20candidate%20indicators.pdf.
4. HELCOM, 2017c. Zooplankton mean size and total stock. HELCOM core indicator report.Online. 20 Nov 2017, http://www.helcom.fi/baltic-sea-trends/indicators/zooplankton-mean-size-and-total-stock-(MSTS)/ ISSN 2343-2543.
5. ICES, 2005. Report of the Working Group on Marine Habitat Mapping (WGMHM). ICES WGMHM, ICES, 91
6. Magliozzi, C., Druon, J.-N., Palialexis, A., Artigas, L. F., Boicenco, L., González-Quirós, R., Gorokhova, E., Heyden, B., McQuatters-Gollop, A., Varkitzi, I., Pelagic habitats under MSFD D1: current approaches and priorities, EUR 30619 EN, Publications Office of the European Union, Luxembourg, 2021, ISBN 978-92-76-30988-8, doi:10.2760/942589, JRC123960
7. OSPAR Commission, 2017. Eutrophication Status of the OSPAR Maritime Area. Third Integrated Report on the Eutrophication Status of the OSPAR Maritime Area. 164 pp. https://www.ospar.org/documents?v=37502.
8. Rombouts, N. Simon, A. Aubert, T. Cariou, E. Feunteun, L. Guérin, M. Hoebeke, A. McQuatters-Gollop, F. Rigaut-Jalabert, L.F. Artigas, Changes in marine phytoplankton diversity: Assessment under the Marine Strategy Framework Directive, Ecological Indicators, Volume 102, 2019, Pages 265-277, ISSN 1470-160X, https://doi.org/10.1016/j.ecolind.2019.02.009.
9. Sakina-Dorothée Ayata, Jean-Olivier Irisson, Anais Aubert, L. Berline, Jean-Claude Dutay, et al.. Regionalisation of the Mediterranean basin, a MERMEX synthesis. Progress in Oceanography, Elsevier, 2017, 163, pp.7 - 20. ⟨10.1016/j.pocean.2017.09.016⟩. ⟨hal-01629104⟩
10. Tew-Kai, E.; Quilfen, V.; Cachera, M.; Boutet, M. Dynamic Coastal-Shelf Seascapes to Support Marine Policies Using Operational Coastal Oceanography: The French Example. *J. Mar. Sci. Eng.* 2020, *8*, 585. https://doi.org/10.3390/jmse8080585
11. UNEP/MAP, 2013. Towards the Identification and Draft Reference List of Pelagic Habitat Types in the Mediterranean Sea. http://www.rac-spa.org/nfp11/nfpdocs/working/WG_382_11_ENG_1706.pdf
12. UNEP/MAP, 2017. Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria. United Nations Environment Programme / Mediterranean Action Plan, Athens, Greece.
13. I. Varkitzi, J. Francé, A. Basset, F. Cozzoli, E. Stanca, S. Zervoudaki, A. Giannakourou, G. Assimakopoulou, A. Venetsanopoulou, P. Mozetič, T. Tinta, S. Skejic, O. Vidjak, J-F. Cadiou, K. Pagou, Pelagic habitats in the Mediterranean Sea: A review of Good Environmental Status (GES) determination for plankton components and identification of gaps and priority needs to improve coherence for the MSFD implementation, Ecological Indicators, Volume 95, Part 1, 2018, Pages 203-218, ISSN 1470-160X, https://doi.org/10.1016/j.ecolind.2018.07.036.
14. Würtz, M., 2010. Mediterranean Pelagic Habitat: Oceanographic and Biological Processes, an Overview. IUCN, Gland, Switzerland, and Malaga, Spain. http://www.rac-spa.org/sites/default/files/doc_fsd/med_pelagic_habitats.pdf.