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Videoconference, 6-7 June 2024

Agenda Item 4: Monitoring and assessment elements for the IMAP common indicators (CI1 and CI2) on marine habitats

4.2. Way forward to develop common indicators using phytoplankton and zooplankton for Pelagic Habitat

Way forward to develop common indicators using phytoplankton and zooplankton for Pelagic Habitat

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SPA/RAC
Tunis, 2024

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Note by the Secretariat

At their 23rd Ordinary Meeting (Portorož, Slovenia, 5-8 December 2023), the Contracting Parties, requested SPA/RAC to continue the work of the Multidisciplinary group of experts to advance in the development of the indicator using phytoplankton and zooplankton for relevant IMAP biodiversity indicators, based on the outcomes of relevant ongoing projects in the region and in collaboration with relevant regional research centres. Moreover, In the SPA/RAC programme of work for 2024-2025, it is planned to develop the common indicator on pelagic habitats.

The present document summarises the Conclusions and recommendations of the Multidisciplinary group of experts nominated by the Contracting Parties to define parameters allowing to use phytoplankton and zooplankton for relevant IMAP biodiversity indicators and elaborate the List of Reference of Pelagic Habitat Types in the Mediterranean Sea and provide the way forward to develop the common indicator on pelagic habitats.

1. Introduction:

1. The Contracting Parties to the Barcelona Convention and its Protocols, at their COP 22 (Antalya, Türkiye, 7-10 December 2021), requested SPA/RAC to establish a multidisciplinary group of experts nominated by the Contracting Parties to define parameters allowing to use phytoplankton and zooplankton for relevant IMAP biodiversity indicators and elaborate the List of Reference of Pelagic Habitat Types in the Mediterranean Sea so that it can be used, where necessary, as a basis for identifying reference pelagic habitats to be monitored and assessed at the national level under the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria for consideration of COP 23.

2. In this context, following an invitation sent by SPA/RAC, the Contracting Parties nominated national experts with expertise in field related to the typology of pelagic habitats and monitoring using phytoplankton and zooplankton. The group met online on 5 April 2023, and produced the conclusions and recommendations, adopted by the 23rd Meeting of the Contracting Parties (COP 23) (Portorož, Slovenia, 5-8 December 2023). The Same meeting requested SPA/RAC to continue the work of the Multidisciplinary group of experts to advance in the development of the indicator using phytoplankton and zooplankton for relevant IMAP biodiversity indicators, based on the outcomes of relevant ongoing projects in the region and in collaboration with relevant regional research centres.

3. As provided for in the decision IG.26/14 concerning the programme of work and budget for 2024-2025, SPA/RAC planned to develop the common indicators for the pelagic habitats for consideration by CoP24.

2. Outcomes of the multidisciplinary group of experts

4. The multidisciplinary group of experts formulated its conclusions and recommendations concerning:

- The list of Reference of Pelagic Habitat Types in the Mediterranean Sea so that it can be used, where necessary, as a basis for identifying reference pelagic habitats to be monitored and assessed at the national level under the Integrated Monitoring and Assessment Programme of the Mediterranean Sea and Coast and Related Assessment Criteria (IMAP)

- The parameters allowing to use phytoplankton and zooplankton for relevant IMAP biodiversity indicators

1.1. The List of Reference of Pelagic Habitat Types in the Mediterranean Sea

5. The group of experts confirmed that the modified classification of pelagic habitat types in the epipelagic layer (0-200m) proposed in UNEP/RAC/SPA in 20131 can be used, where necessary, as a basis for identifying reference pelagic habitats to be monitored and assessed at the national level under IMAP. This reference list could be further developed at national level to consider national features and specificities.

6. They did not reach a conclusion concerning whether the typology defined for pelagic habitats will be computed at seasonal scale or more frequently over a given period (i.e., 6-year cycle) and recommended that the point be discussed in the future.

[1] UNEP/RAC/SPA, 2013: http://www.rac-spa.org/nfp11/nfpdocs/working/WG_382_11_ENG_1706.pdf

7. It will be necessary to phase the typology definition for pelagic habitats with the areas of assessment defined for other Ecological Objectives (EO 5 Eutrophication – EO 9 Pollution) given eutrophication and pollution can act as pressures that should be considered in coherent spatial scales.

8. Frequency of the sampling depends on the proposed typology, on the resources available and on plankton dynamics and should be adapted at a minimum to the temporal scale of the typologies used.

9. Satellite-derived products for chlorophyll-a are valuable tools for acquiring data offshore because they are regularly validated and calibrated with in-situ data and account for reprocessing phases undertaken by NASA and ESA

Reference list of pelagic Habitat Types for the epipelagic layer (0-200m) as adopted by CoP23 (Decision IG.26/5) *

	Pelagic Habitat Types	**Water mass**	**Comments****
A.1.	Reduced salinity water	coastal lagoons	WFD correspondence [2]
A.2.	Variable salinity water – high surface or subsurface CHL (>3 mg/m^3)	estuaries, river plumes	Transitional waters with WFD correspondence [3] (Values should be revised)
A.3.	Marine water: neritic - medium surface or subsurface CHL (0.5-3 mg/m^3)	upwellings, re-suspension in shallow waters and outskirts of river plumes, winter mixing areas	WFD water type II, type III
A.4.a	Marine water: oceanic - medium surface or subsurface CHL (0.5-3 mg/m^3)	Upwellings, and winter mixing areas	WFD water type III
A.4.b	Marine water: oceanic - low to medium surface CHL (~0.1-1.0 mg/m^3)	Hydrological features (fronts and gyres)	WFD water type III
A.5.a.	Marine water: oceanic - very low surface CHL (<0.1 mg/m^3) with deep CHL maximum	euphotic depth > mixed layer depth	WFD water type III
A.5.b.	Marine water: oceanic - very low surface CHL (<0.2 mg/m^3) without deep CHL maximum	euphotic depth < mixed layer depth	WFD water type III

* This list can be used, where necessary, as a basis for identifying reference pelagic habitats to be monitored and assessed at the national level under IMAP. This reference list could be further developed at national level to consider national features and specificities

**Each country should specify the range of CHLa, Salinity, depth and if annual/seasonal values are used

[2] European Commission Decision 2018/229/EU establishing, pursuant to Directive 2000/60/EC of the European Parliament and of the Council, the values of the Member State monitoring system classifications as a result of the intercalibration exercise, and repealing Commission Decision 2013/480/EU (notified under document C (2018) 696) https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018D0229&from=PL

[3] WFD Annex 2 part 1.2.3. defines Transitional waters. see also Guidance document n.o 5 , Transitional and Coastal Waters, Typology, Reference Conditions and Classification Systems and Water Framework Directive Intercalibration Technical Report - Part 3: Coastal and Transitional Waters

1.2. The parameters allowing to use phytoplankton and zooplankton for relevant IMAP biodiversity indicators

10. The group recognised that overall, while there has been progress in developing indicators based on phytoplankton and zooplankton, continued research and development are needed to define these indicators and improve their usefulness for assessing and managing pelagic habitats.

11. The main pressures identified so far on pelagic habitats are:

- hydroclimatic conditions and shifts that should be considered in light of climate change;
- Eutrophication;
- Biological invasions;
- Contaminants (chemicals and marine litter);
- Overfishing;
- Aquaculture;
- Physical disturbance due to the influence of man-made structure (wind farms, desalination plants, hydrocarbon drilling, marinas etc.);
- Acidification;
- Maritime traffic.

12. As pelagic habitats are closely linked to several Ecological Objectives of the EcAp like EO5 Eutrophication and EO9 Pollution, it is important to enhance synergy and better integration among Ecological objectives (by improving data collection and sharing, data harmonization and interoperability, etc.).

13. Monitoring and assessing phytoplankton and zooplankton communities can be logistically challenging. Therefore, there is a need to develop efficient, harmonised and cost-effective monitoring methods that can be applied across the region

14. Long-term series of data are critical for using indicators based on phytoplankton and zooplankton effectively. Without sufficient long-term data, it is impossible to distinguish between natural variability and anthropogenic impacts, making it challenging to identify trends or changes. Monitoring frequency should be adapted to integrate Seasonal and long-term temporal variability and rely on existing data.

15. The following parameters can be used to effectively use these organisms as indicators:

- Biomass [Chla, Carbon]
- Abundance (per species/genius or groups)
- Size and biovolume

16. Abiotic parameters could be measured at the relevant space and time to interpret the changes in plankton communities:

- Water Temperature
- Salinity
- Transparency
- Oxygen
- Turbidity
- pH
- Nutrients concentration
- Meteorological data (air temperature, precipitation, wind intensity and direction, etc.)

3. Way forward to develop common indicators using phytoplankton and zooplankton for Pelagic Habitat

17. Only 7 Mediterranean countries were represented in the multidisciplinary group of experts. SPA/RAC will invite the Contracting Parties who have not yet appointed members to the multidisciplinary group of experts to do so as soon as possible to allow to take advantage of the diversity of skills and expertise across the region. Liaison with OSPAR commission could be established in order to benefit from their experience in conducting Pelagic Habitats Thematic Assessment. Contact is underway with the Joint Research Centre (JRC) of the European Commission in order to join the group to be in coherence the European Union (EU) Marine Strategy Framework Directive (MSFD).

18. The group should meet mostly online as soon as possible to discuss and agree on the ways, means and timeline to advance in the development of the indicator using phytoplankton and zooplankton for relevant IMAP biodiversity indicators as requested by CoP23. They should elect a coordinator to moderate the meetings and help SPA/RAC in drafting the deliverables to be submitted in due time for approval and adoption by the Governing bodies of the Barcelona Convention. At least three meetings are necessary to establish the group and to agree on the indicators using phytoplankton and zooplankton.

19. SPA/RAC will act as the secretariat of the group and will facilitate its meetings.