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

**4.1. Element for the preparation of the assessment methodologies, Assessment criteria and thresholds for biodiversity common indicators CI1 and CI2, based on the MedQSR 2023 recommendations.**

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## **Note by the Secretariat**

At their 19<sup>th</sup> Ordinary Meeting (COP 19, Athens, Greece, 9-12 February 2016), the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) and its Protocols adopted the Integrated Monitoring and Assessment Programme and related Assessment Criteria (IMAP).

At their 20<sup>th</sup> Ordinary Meeting (COP 20, Tirana, Albania, 17-20 December 2017), the Contracting Parties endorsed, in Decision IG.23/6, the key findings of the 2017 Mediterranean Quality Status Report (the MED QSR Decision), that recommend a list of directions towards the 2023 MED QSR including the definition of the reference state of habitats and species, threshold values and assessment criteria. To that effect, in line with the Programme of Work 2020-2021 adopted by COP21 (Naples, Italy, December 2019), SPA/RAC has undertaken actions aimed at standardizing the monitoring and assessment methods related to IMAP Biodiversity Cluster, including the elaboration of monitoring and assessment scales, assessment criteria, thresholds and baseline values for the IMAP common indicators (CI).

For the two IMAP Common Indicators (CIs) related to benthic habitats: CI1 - Habitat distributional range and CI2 - Condition of the habitat's typical species and communities, SPA/RAC conducted a study during the biennium 2022-2023 to evaluate their implementation status (UNEP/MED WG.547/11) and assess the possibility of proposing monitoring and assessment elements with the support of the Biodiversity Online Working Group (OWG) for benthic habitats. This study, submitted to the CORMON meeting in March 2023.

The present document summarises the main outcomes of the study and provide element for the preparation of the assessment methodologies, Assessment criteria and thresholds for biodiversity common indicators CI1 and CI2, based on the MedQSR 2023 recommendations.

**Element for the preparation of the assessment methodologies, Assessment criteria and thresholds for biodiversity common indicators CI1 and CI2, based on the MedQSR 2023 recommendations.**

1. At their 19th Ordinary Meeting (COP 19, Athens, Greece, 9-12 February 2016), the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) and its Protocols adopted the Integrated Monitoring and Assessment Programme and related Assessment Criteria (IMAP).
2. At their 20th Ordinary Meeting (COP 20, Tirana, Albania, 17-20 December 2017), the Contracting Parties endorsed, in Decision IG.23/6, the key findings of the 2017 Mediterranean Quality Status Report (the MED QSR Decision), that recommend a list of directions towards the 2023 MED QSR including the definition of the reference state of habitats and species, threshold values and assessment criteria.
3. In this context and within its Programme of Work for 2020-2021 and 2022-2023, as endorsed by COP21 and COP22 respectively (Naples, Italy, December 2019; Antalya, Turkey, December 2021), SPA/RAC has been actively engaged in advancing the development and standardization of monitoring and assessment methods pertaining to the IMAP Biodiversity Cluster. With the financial support of the EU-funded IMAP-MPA project, SPA/RAC has initiated the formulation of assessment criteria, thresholds, and baseline values for habitats and species with sufficient data availability, in accordance with the 2017 MED QSR. As a result, Monitoring and Assessment Scales, Assessment Criteria, Thresholds, and Baseline Values for the IMAP Common Indicators 3, 4, and 5 related to sea birds, Marine Mammals, Marine Turtles, and for the IMAP Common Indicator 6 related to Non-Indigenous Species have been elaborated.
4. For the two IMAP Common Indicators (CIs) related to benthic habitats: CI1 - Habitat distributional range and CI2 - Condition of the habitat's typical species and communities, SPA/RAC conducted a study to evaluate their implementation status (UNEP/MED WG.547/11) and assess the possibility of proposing monitoring and assessment elements with the support of the Biodiversity Online Working Group (OWG) for benthic habitats. This study, submitted to the CORMON meeting in March 2023.
5. The study analysed the information on the implementation status of the IMAP CIs indicators related to marine habitats: CI1 - Habitat distributional range and CI2 - Condition of the habitat's typical species and communities. The analysis was based on an extensive documentation research and consultation process with the national experts on the IMAP and MSFD implementation and specialists of the Reference list of habitats and typical species.
6. For this assessment 11 main habitats with Priority 1 level from the Barcelona Convention updated list were selected ranging from rocky, biogenic and sediment benthic communities dwelling from the Medio-littoral to the Bathyal zone. this selection provides a good assessment on the overall implementation status and how the different Barcelona Convention Contracting Parties are conducting the monitoring activities focusing on scales of monitoring, scales of assessment and assessment criteria; and threshold and baseline values based on the available data.

7. One of the main conclusions found is the low level of implementation of monitoring for CIs related to benthic habitats. These findings clearly reflect one of the major problems encountered during this assessment, the difficulty to access the information on the monitoring schemes and their implementation status.

8. For both CI1 and CI2, there weren't significant differences in implementation levels overall. However, in terms of ongoing monitoring activities, CI2 had a higher implementation status compared to CI1. CI1 monitoring involves habitat mapping surveys, which require heavy equipment deployment at sea over large areas for extended periods, along with ground truthing supported by diving teams and ROV missions. Conversely, CI2 monitoring focuses on more limited areas and employs lighter methods, especially in shallow-water habitats, such as various forms of visual census. The lower implementation of CI1 compared to CI2 could be attributed to the higher operational costs involved. Some Contracting Parties have integrated monitoring activities funded by EU projects to support habitat mapping and IMAP implementation into their CI protocols.

9. Ongoing habitat monitoring protocols for CI1 and CI2 predominantly focus on habitats in the Medio- and infralittoral zones, particularly those dominated by macroalgal species and seagrass meadows. Contracting Parties prioritize monitoring activities for habitats such as Well illuminated infralittoral rock, Algal-dominated infralittoral rock, and *Posidonia oceanica* meadows. In deeper zones, monitoring efforts are concentrated on coralligenous and circalittoral rhodolith beds, with fewer efforts on habitats in the Bathyal zone. These variations in monitoring efforts are influenced by methodological readiness and cost-effectiveness, with lower operational costs for shallower habitats. Efforts under the EU Water Framework Directive have led to the standardization of monitoring methods for shallow infralittoral habitats, benefiting the implementation of IMAP CIs. Commonly adopted methods include the CARLIT method for algal-dominated habitats and the use of POMI and PREI ecological indices for *Posidonia oceanica* meadows by both EU and non-EU Contracting Parties.

10. Encouraging the adoption of harmonized monitoring approaches offers numerous benefits for Contracting Parties, including access to tested materials, trained staff, and shared experiences. A unified approach in the Mediterranean region enhances the reliability of assessing habitat ecological status globally. While several indices exist for evaluating coralligenous habitats, harmonizing monitoring methods remains a challenge. Lessons from established protocols like CARLIT should guide the development of harmonized approaches, with a focus on Priority Level 1 habitats.

11. In general, Habitat Monitoring Protocols (HMP) for CI1 lacked detailed information on spatial scales. Due to the high costs associated with mapping activities, it is recommended to focus monitoring efforts on select few km<sup>2</sup> sectors along the coasts instead of attempting to cover the entire habitat distribution. This approach enables detailed mapping of habitats and facilitates monitoring of their extent and condition over time. Only for rare habitats with restricted spatial distribution, such as some marine angiosperms, its total habitat mapping is recommended. Adopting a strategy that combines mapping of defined areas with total mapping of rare habitats can reduce costs and ensure recurrent monitoring of the same areas. Additionally, this approach allows for planning monitoring of different sectors over the 6-year evaluation period.

12. It is recommended to expand the number of monitoring sites within Habitat Monitoring Programs (HMPs) to ensure robust and representative assessment of ecological status, especially considering the

vast coastlines of Contracting Parties. While most HMPs currently incorporate 1-10 monitoring sites, some habitats may require up to 100 or more sites. HMPs with fewer than 50 monitoring sites for certain habitats may not adequately capture ecological status. Exceptions could apply for habitats with limited distribution or countries with shorter coastlines. To address this, Contracting Parties should establish a minimum number of monitoring sites based on habitat coverage and coastline extension. Additionally, increasing the inclusion of monitoring sites within marine protected areas (MPAs) is recommended. This approach not only supports MPA monitoring efforts but also facilitates comparisons with non-protected sites, providing valuable baseline data.

13. For both CI1 and CI2, the most common temporal scale indicated is 2-3 years. Conducting monitoring activities every 2-3 years is adequate to track potential changes in the environmental status of the habitats. In addition, episodic events such as mass mortalities, proliferation of filamentous algae can occur, and the monitoring protocols should be able to assess their effects with 2-3 years monitoring frequency. Of course, monitoring on an annual basis would be ideal but the associated organization level and operational costs may result in a lower spatial and habitat resolution.

14. It is recommended that the Contracting Parties should find the right trade-off between spatial and temporal resolution according to the resources allocated (e.g. staff, equipment, vessels etc..) in order to maximize the number of monitoring sites at least two times during the 6-year evaluation period, if possible.

15. It's recommend planning to conduct the monitoring activities on a specific habitat in the same year (within the 6-year period) instead of conducting the surveys over different years. This would allow acquiring information over the same years across the Contracting Parties and reducing the potential sources of variability linked to the different annual conditions. Alternatively, Contracting Parties may organize their monitoring activities covering all targeted habitats by sectors that are visited every 3 years.

16. Despite advancements in habitat mapping methodologies, significant areas of Contracting Parties remain unmapped. Monitoring efforts for CI1 rely on tracking habitat area/extent, but reliable reporting is hindered by variations in mapping techniques and classifications used by different management bodies.

17. To enhance the implementation of CI1 monitoring activities, it's recommended pursuing the harmonization efforts on the implementation of habitat mapping across the Contracting Parties.

18. For CI2 different metrics are available for some of the habitats analysed. However, the development of these metrics is more advanced and widespread for three groups of habitats i.e. Medio-littoral and Infralittoral hard substrates habitats [MB1.51a Well illuminated infralittoral rock, exposed, MA2.5 Littoral biogenic habitat, MB1.51 Algal-dominated infralittoral rock], infra-littoral soft sediment [MB2.54 *Posidonia oceanica* meadow and MB5.521 Association with indigenous marine angiosperms] and Circalittoral hard substrate [MC1.5 Circalittoral rock and MC2.51 Coralligenous platforms]. For the rest of habitats, the consensus on what metrics to measure largely depends on the Contracting Parties evidencing a clear lack of consensus.

19. The Assessment criteria on the habitat status are derived from the calculation of different indices: medio- and upper infralittoral rock (e.g. CARLIT), seagrass meadows (mainly *P. oceanica* e.g. PREI,

POMI) and Coralligenous habitats (e.g. INDEX-Cor, MACS) and most of them have associated Ecological Quality Reference and the corresponding Thresholds. For most habitats, the Contracting Parties are using operational Baselines.

20. Given the current limitations in comparing and intercalibrating various indices, it is challenging to prioritize one over another. Therefore, it is advised to establish a minimum set of metrics to measure for each habitat across Contracting Parties. This basic set of metrics can be combined with others to calculate existing indices or develop new ones for future assessment criteria. Defining these metrics should involve consensus among habitat experts from different Contracting Parties to ensure wider adoption in the Mediterranean region. Additionally, selecting indices that require the most cost-effective metrics is recommended to manage acquisition time and budget constraints effectively.

21. It is recommended to establish two common repositories. The first would contain the description of the Habitat Monitoring Protocols (based on the framework developed in this assignment) by the different Contracting Parties. A second repository should include the results of the implementation of the monitoring activities. Some efforts are already underway regarding the reporting of monitoring data into the IMAP Info System for three specific habitat types (Posidonia, Coralligenous, and Maerl); however, there is still a significant information gap to address.

22. Considering the ongoing work on the development of the EO6, it is recommended that the IMAP for EO1 (benthic habitats) and EO6 should become more closely aligned, as has been done under the MSFD through the 2017 GES Decision.

23. As provided for in the SPA/RAC programme of work for 2024-2025, SPA/RAC will continue the elaboration of the assessment methodologies, Assessment criteria and thresholds for biodiversity common indicators CI1 and CI2, based on the MedQSR 2023 and study to evaluate their implementation status (UNEP/MED WG.547/11) recommendations.

To do so, it is proposed to:

24. Establish dedicated CI1 and CI2 working group for the three habitat types (Posidonia, Coralligenous, and Maerl); with the participation of habitat experts from all the different Mediterranean sub-regions to guarantee a good geographical coverage, to discuss and identify the minimum common set of features of the habitat monitoring protocols to be implemented by the Contracting Parties. These working groups should provide technical and operational science-based and cost-effective directions including intercalibration exercises and will define the assessment methodologies, Assessment criteria and thresholds.

25. A consultant will be recruited to assist the Regional Activity Centre for Specially Protected Areas (SPA/RAC) to coordinate, moderate and compile the results of the work of dedicated working groups for CI1 and CI2 for the three habitat types (Posidonia, Coralligenous, and Maerl), and propose the elements for the preparation of assessment methodologies, assessment criteria, and thresholds for the common biodiversity indicators CI1 and CI2 for review and discussion by the Meeting of the Ecosystem Approach Correspondence Group on Monitoring (CORMON) for biodiversity and fisheries in 2025.