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7.2 IMAP information system platform related to biodiversity and nonindigenous species cluster

Biodiversity and Non-Indigenous Species: Data Standards and Data Dictionaries for Selected IMAP Common Indicators

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1. Introduction

1. In the framework of the Programme of Work and Budget for 2018–2019 of UN Environment/MAP (Decision IG.23/14), INFO/RAC is leading the work on the development of the “*Info/MAP platform and platform for the implementation of IMAP fully operative and further developed, connected to MAP components' information systems and other relevant regional knowledge platforms, to facilitate access to knowledge for managers and decision-makers, as well as stakeholders and the general public*” (output 1.5.1).

2. The **EU funded EcAp-MED II Project** is supporting this output by the development of a Pilot IMAP Compatible Data and Information System (IMAP (Pilot) Info System), that would enable the Contracting Parties to start reporting data as of mid-2019 for selected **11 IMAP Common Indicators**. The IMAP (Pilot) Info System lay down the basis for building a fully operational IMAP Info System, by the end of the initial phase of IMAP, as provided for by Decision IG.22/7.

3. The 11 of the 27 IMAP Common Indicators (CI) are: **1,2,6,13,14,15,16,17,22,23** with the recent inclusion of Bathing Water Quality (**Common Indicator 21**).

4. The criteria used for selecting the 11 Common Indicators as part of the IMAP (Pilot) Info System are: a) maturity of Common Indicators as of 2017, in terms of monitoring experiences and best practices; b) existing data collection and availability representing all IMAP clusters; c) availability of Common Indicators Guidance Factsheets and/or metadata templates.

2. IMAP (Pilot) Info System, Data standards and Data dictionaries

5. The draft **IMAP (Pilot) Info System** is under development by INFO/RAC in close consultations with UN Environment/MAP Components. The IMAP (Pilot) Info System will be able to receive and process data according to the proposed Data Standards and Data Dictionaries (DSs and DDs) that set the basic information on data reporting within IMAP.

6. It should be noted that proposed DSs and DDs also build on the respective relevant experience of INFO/RAC, as well as the experience gained in building other relevant databases such as EMODnet Chemistry platform, SeaDataNet and WISE Data Dictionary maintained by EEA and available in EIONET. In such a way the IMAP (Pilot) Info System is interrelated with other regional marine databases (e.g. SeaDataNet, SeaDataCloud, EMODNET, etc.), essential to avoid duplication of data transmissions for the Contracting Parties.

7. **Data Standards (DSs)** are prepared in the form of Excel spreadsheets in which every column indicates a field to be filled by the data providers. **Data Dictionaries (DDs)** are prepared in the form of Excel spreadsheets in which every row provides information to guide the data provider. DSs & DDs are spreadsheets included in the **same Excel file**, downloadable from the IMAP (Pilot) info system. The data uploaded using the Data Standards will be suitable for the inclusion in the database.

8. The Regional Meeting on IMAP Implementation (**Best Practices, Gaps and Common Challenges (IMAP Best Practices Meeting), Rome, Italy, 10-12 July 2018**) reviewed the first drafts of Data Standards and Data Dictionaries for the selected IMAP Common Indicators. Following its outcome and the bilateral consultations between INFO/RAC and SPA/RAC, the revised version of DSs and DDs for CI 1,2 and 6 has been presented to the **CorMon Biodiversity and Fisheries (Marseille, 12-13 February 2019)** for review and feedback.

9. The present proposal of DSs and DDs for **IMAP Common Indicators 1,2 and 6 related to Biodiversity (EO1) and Non-indigenous species (EO2)** has been further developed considering also the outputs of the CorMon Biodiversity and Fisheries (Rome, Italy, 21 May 2019).

10. The updated proposal of DSs and DDs provides broader data sets and associated dictionaries than requested as mandatory by the related IMAP Guidance Factsheets and Metadata Templates. In the Data Standards the mandatory data are represented in black and the **non-mandatory** ones in red. The possibility to fill in also **non mandatory** fields is given to allow the Contracting Parties that already have monitoring systems collecting a wider set of data also to report them as the additional data. It is at the discretion of the Contracting Parties to decide on reporting on non-mandatory data sets.

11. Following the outcome of CORMON Biodiversity, the finalized DSs and DDs will be uploaded in the IMAP (Pilot) Info System and the consequent changes to the data base structure will be provided. In other words, once all the parameters and measurement units are defined, the correspondent data flow will be activated. This will be followed by a **testing phase** of the IMAP (Pilot) Info System that will be realized with the voluntary participation of interested countries. They will be invited to start providing data flows for the selected Common Indicators supported by the IMAP (Pilot) Info System. After the testing and reflection of its findings, it is expected to have the IMAP (Pilot) Info System fully operational to receive uploaded data for 11 selected IMAP Common Indicators.

12. Starting from the middle of 2019, after the conclusion of the EcAp MED II Project, further modules will be discussed and agreed with the thematic MAP Components for each already selected Common Indicator and for the remaining ones in view of the completion of the IMAP 27 Common Indicator set, according to the available resources specifically allocated.

13. Apart from the 17 remaining Common Indicators, the selected 11 will also go through a process of enlargement and development. INFO/RAC, is currently proposing a series of modules for each Common Indicator covering the main monitoring issues but in the next period (from June 2019) they will be integrated with **new modules** that are in discussion or in development.

14. The finalized DSs & DDs will be uploaded in the Pilot and the consequent changes to the data base structure will be provided, activating the correspondent **data flow** by June 2019.

15. The **testing phase** of the Pilot will be realized with the **voluntary participation of interested countries**, who will be invited to start providing data flows for the selected Common Indicators supported by the Pilot Info System.

16. The aim of the current document is to present the “final” version of DSs & DDs relative to the phase I of development of the IMAP (pilot) Info System that will be available for data collection by the end of June 2019 (Conclusion of EcAp MED II project).

17. Contracting Parties are requested to provide **guidance, inputs and further reflections** on the “final” DSs &DDs for the selected common indicators. On this basis, a continuous process of harmonization with IMAP guidance factsheets and common indicators monitoring protocols will be assured for next future (Phase II) starting from July 2019. Consequently, also the structure of the Metadata and Data Dictionaries could be revised and harmonized based on the final result of the IMAP developing process.

18. The “final” DSs & DDs have to be intended as first agreed version useful to allow the starting of the pilot phase of the information system. Interactive work will be needed to refine these Data Standards and Data Dictionaries gradually.

19. As stated by the **CORMON Biodiversity and Fisheries (Marseille 12-13 February 2019)** Monitoring protocols should guide data standards development that is carried out in parallel with discussions on the agreed common methodologies. Information systems are a major tool to collect and transfer data. Given that the development of indicators, monitoring methods and data standards are progressing in parallel, close and continuous dialogue and collaboration are needed among the bodies responsible for these developments to ensure their proper alignment and coherence.

20. The appointment of on-line network of designate qualified experts, supporting INFO/RAC on finalization of DSs and DDs for the cluster Biodiversity and Fisheries, as requested during the CorMon of Marseille (12-13 February 2019) and Rome (21 May 2019), could usefully ensure this coherence.

21. IMAP (Pilot) Info System will take in consideration the monitoring guidelines of common indicators discussed during the CorMon meetings (Marseille, France, 12-13 February 2019 and Rome, Italy, 21 May 2019) and endorsed during this Meeting of SPA/BD Thematic Focal Points, as presented under agenda item 7.1. "Implementation of the first phase (2016-2019) of the Integrated Monitoring and Assessment Programme (IMAP - Biodiversity and nonindigenous species) in the framework of the EcAp Roadmap".

3. Data Standards and Data Dictionaries for IMAP Common Indicators 1,2 & 6

Biodiversity (EO1):

22. The DSs & DDs for Biodiversity CI 1&2 were developed for habitats expressly reported in the IMAP guidance factsheets. At moment, in the framework of the EcAp-MED II project, the following habitats were taken into account:

- **Coralligenous habitat,**
- **Maerl-Rhodolith beds habitat,**
- **Marine vegetation habitat, *Posidonia oceanica* meadows.**

The reference document for the habitats to be monitored is:

- Draft Updated Reference List of Marine Habitat Types for the Selection of Sites to be included in the National Inventories of Natural Sites of Conservation Interest in the Mediterranean.

23. In order to draw up the updated Reference List of Marine Habitat Types for the Mediterranean Region, an updated and more comprehensive draft classification of benthic marine habitat types for the Mediterranean region (UNEP/MED WG.457/3) and Draft Updated Reference List of Marine Habitat Types for the Mediterranean region (UNEP/MED WG.457/4) were discussed (Rome, Italy 22-23 January 2019), and elaborated based on:

- Classification of benthic marine habitat types for the Mediterranean region of the Barcelona Convention (1998),
- the schemes of the new EUNIS classification system (Table 1),

- the List of French Mediterranean habitats (Michez et al, 2014),
- the Spanish inventory of marine habitats (Templado et al., 2012),
- the Croatian List of Marine Habitats (Bakran-Petricioli, 2011), and
- new habitats based on the experts' inputs.

Furthermore, the following lists were taken into account:

- the European Red list of marine Habitats in the Mediterranean
- the list compiled by OCEANA, with the contribution of experts on Mediterranean deep-sea habitats, in order to implement the UNGA Resolutions for the protection of Vulnerable Marine Ecosystems (VMEs) in the GFCM context.

24. The proposed Reference List in the IMAP (Pilot) Info System will be periodically reviewed, remaining dynamic to ensure adequate harmonisation with other classifications defined in relevant frameworks, such as EUNIS, and according to the implementation inputs of the IMAP. For each module, the relative habitats are extracted from the updated list (Maerl/Rodolith beds and Coralligenous Habitats) and reported as reference. The list of habitats showed in the Data Dictionaries will be updated according to the new IMAP decisions.

25. The Data Dictionaries will present also a List of species to be monitored for each habitat type. The list will be the sum of the list of species agreed at national level and part of the national IMAP. At moment this list is not available and will be updated in light of the adopted national IMAP and the Reference List of Marine Habitat Types for the Mediterranean region discussed and endorsed during this Fourteenth Meeting of SPA/BD Thematic Focal Points under agenda item 5.3 "Updating of the Action Plan for the Conservation of Marine Vegetation in the Mediterranean Sea 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 in the Mediterranean".

26. To avoid typing errors, two main databases for consultation are proposed as reference:

- WORMS World Register of Marine Species (<http://www.marinespecies.org/>)
- ALGAEBASE (<http://www.algaebase.org>)

Coralligenous habitat

27. The Methodological Document on "Data Dictionary on IMAP C.I. 1&2 related to Coralligenous Habitat" is mainly referred to ROV monitoring technique and provides detailed information to set up this activity.

28. As this device is currently used for monitoring Coralligenous habitat but is not exclusive and not so widespread in the Mediterranean basin (on the basis of CPs comments), in the final version of DSs & DDs the section about Diver has been updated and enlarged.

29. The choice of the monitoring approach will be made by the country on the basis of its national monitoring plan and as a function of depth and nature of the monitored area.

30. It is to be highlighted that Contracting Parties can use one of the two methods (ROV and Diver) included in the DSs and DDs. **Excel spreadsheets corresponding to a method not used by the CP can be left empty.**

31. Although a common decision at regional level on the appropriate software for image analysis and a discussion on it should be open, at present in the methodological document on Coralligenous it is not proposed a specific one. Data collected, using different software can be equally supported by the pilot info system.

32. According to inputs received by Countries, a repository of photos will be available in IMAP (Pilot) Info System and the field “Photo ID” is included into Data Standards to link the file of the photo to the associated information. Such photo files can be transferred to IMAP plot Info System as attached to the excel file filled with monitoring data and compliant with data standards.

33. Other relevant issues have been raised by some countries and deserve a further in-depth discussion among the designated experts on the identification of monitoring methodologies in the framework of IMAP process, counting on the full support of INFO/RAC in including such as inputs in the IMAP (pilot) Info System.

Maerl-Rhodolith beds habitat

34. In Phase II other parameters useful to characterize the habitats (i.e Organic Matter etc.) could be added after a further discussion with Countries.

35. The fields referred to granulometry were modified into non mandatory (in this phase I) to collect observations from some countries but it has to be highlighted that granulometry is a relevant parameter to characterize the habitat conditions as asked by C.I. 2. In addition, reference methods related to granulometry analysis need to be identified by thematic component of MAP and CPs.

36. The updated Data Standards will give the possibility to collect also information about associated macrofauna species.

Marine vegetation habitat, *Posidonia oceanica* meadows

37. The updated DSs, compared to the previous version, provides a minor number of mandatory fields as requested by some country.

Non – indigenous species (EO2):

38. The draft Metadata and Data Dictionaries for NIS (Common Indicator 6) were developed based on the Common Indicator guidance Factsheets (UNEP(DEPI)/MED WG.430/3), and will take in consideration the guidelines for monitoring non indigenous species (UNEP/MED WG.458/4) discussed during the CorMon meetings on biodiversity and fisheries (Marseille, France, 12-13 February 2019 and Rome, Italy, 21 May 2019).

39. The draft metadata include the list of species endorsed by countries during the validation of their national IMAP. Further updating of this list will be reported into the DDs.

40. Further update of DSs and DDs on invertebrates and fishes have been proposed, including comments collected during and after CorMon Biodiversity and Fisheries (Marseille, France, 12-13 February, and Rome, Italy, 21 May 2019). This list will take in consideration the outputs of the joint GFCM-UN Environment/MAP sub-regional pilot study for the Eastern Mediterranean on non-indigenous species in relation with fisheries.

4. Conclusions

41. INFO/RAC recalls that the present document is provided as update of DSs & DDs and considers the inputs received by Contracting Parties during the CorMon meeting organised during the biennial exercise of 2018-2019 including the written comments sent afterwards.

42. INFO/RAC has worked to include most part of the collected inputs, according to the acknowledgements of the scientific community, IMAP reference documents and in close collaboration with SPA/RAC.

43. In order to reach the broader consensus at level of Contracting Parties on the finalization of DSs & DDs, it is needed an in-depth discussion on the proposed changes, followed by a final agreement with the support of the on-line group of national experts to be appointed in due time.

44. In the meantime, part of accepted comments is provided as non-mandatory fields to be confirmed, the remaining ones will be addressed in specific bilateral meetings with countries in Phase II, starting in July 2019.