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**Agenda item 4: Data Standards and Data Dictionaries for selected biodiversity and non-indigenous species
common indicators**

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

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Note by the Secretariat

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).

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** and laying 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.

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

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.

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.

It should be noted that proposed DSs and DDs also build on respective relevant experience of INFO/RAC, as well as the experience gained in building other relevant data bases 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.

Data Standards (DSs) are prepared in a form of Excel spreadsheets in which every column indicates a field to be filled by the data providers. **Data Dictionaries (DDs)** are prepared in a 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.

The first drafts of Data Standards and Data Dictionaries for the selected IMAP Common Indicators were reviewed by the **Regional Meeting on IMAP Implementation: Best Practices, Gaps and Common Challenges (IMAP Best Practices Meeting), Rome, Italy, 10-12 July 2018**. Following its outcome and the bilateral consultations among 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.

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 the outcome of the previous CorMon Biodiversity and Fisheries (Marseille, 12-13 February 2019) and the inputs sent by the Contracting Parties.

This 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 to also report them as the additional data. It is at the discretion of the Contracting Parties to decide on reporting on non-mandatory data sets.

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.

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.

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.

The finalized DSs & DDs attached to the present note will be uploaded in the Pilot and the consequent changes to the data base structure will be provided by the end of April 2019 and the correspondent data flow will be activated by May 2019.

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 (starting from 10 May 2019).

The aim of the current document is to present the “final” version of DSs & DDs relative to the I phase 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)

Contracting Parties 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 on the basis of the final result of the IMAP developing process.

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 gradually refine these Data Standards and Data Dictionaries.

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.

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, could usefully ensure this coherence.

It is crucial speeding up the process of definition of reference documents on monitoring strategies and agreed standardized methodologies since under no circumstances the DSs & DDs development by INFO/RAC could guide the monitoring strategy.

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

Biodiversity (EO1):

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 have been taken into account:

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

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.

In order to draw up the updated Reference List of Marine Habitat Types, an updated and more comprehensive draft classification of benthic marine habitat types for the Mediterranean region (UNEP(DEPI)/MED WG.431/Inf.17) was 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.

The proposed Reference List 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/Rhodolith 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.

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 chosen at level of country and part of the monitoring national plans.

At moment this list is not available and will be updated as soon as the correspondent information will be provided.

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

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.

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.

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

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.**

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.

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.

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

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

The fields referred to granulometry were modified into **non mandatory** (in this I phase) 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.

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

***Posidonia oceanica* meadows habitat.**

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

Non – indigenous species (EO2):

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), in which is remarked that “*no established standard protocols for the monitoring of NIS are available*”.

Waiting for the next development of agreed standards, the draft metadata are proposed for the limited number of species included into the IMAP list. Further updating of this list will be reported into the DDs.

Further update of DSs and DDs on invertebrates and fishes have been proposed, including comments collected during and after CORMON Biodiversity and Fisheries (12-13 February 2019, Marseille).

Conclusions

As general conclusion, INFO/RAC recalls that the present note is provided as update of DSs & DDs and takes into account the inputs received by Contracting Parties during the previous CORMON meeting (Marseille, France, 12-13 February 2019) including the written comments sent afterwards.

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.

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.

In the meantime, part of accepted comments is provided as non-mandatory fields to be confirmed, the remaining ones will be discussed during the actual CORMON meeting.