

### 1.6.6.5 OSPAR request to support the development of common and candidate OSPAR biodiversity indicators for benthic habitats: existing monitoring programmes

#### Advice summary

ICES advises that there are a number of data catalogues containing metadata information of existing (and historical) monitoring programmes of benthic habitats (e.g. JMP and DEVOTES). ICES notes, however, that these catalogues have not been fully quality assured. ICES also notes that none of these catalogues is complete, several are complimentary, and there are also overlaps. The majority of the information contained within these catalogues is based on monitoring data provided by the partners that developed the catalogues and a selection of Contracting Parties, and generally misses data from industry sources, such as that deriving from environmental impact assessments (EIAs).

ICES advises that OSPAR should commission a specific data project, building on existing metadata catalogues, in order to complete an inventory of benthic monitoring programmes within the OSPAR maritime area. The project should consider ways to ensure that the inventory is kept up to date. Completion of this project would enable OSPAR Contracting Parties to gather the information required to design the monitoring necessary to support the multimetric (BH2) and typical species (BH1) indicator requirements. ICES then would be able to evaluate on-going monitoring and be able to advise on gaps.

#### Request

*ICES is requested to support on-going OSPAR indicators work on benthic habitats, in support of the requirements under the MSFD.*

*c) Evaluate monitoring and assessment requirements for multimetric indicator (BH2) and/or typical species (BH1), by providing:*

- i) overview of existing monitoring programmes with associated benthic sampling stations (e.g. WFD, MPA, Natura2000, impact assessment studies, etc.), taking into account the work done under the JMP project/art 11 reporting by countries.*
- ii) overview of existing network of sampling stations and monitoring frequency across all OSPAR regions.*
- iii) evaluation of on-going monitoring with regard to, geographical coverage, parameters consistently measured across the whole network, monitoring design and sampling strategy for assessment requirements (BH2/BH1). Evaluation should identify any gaps and indicate how they could be completed (monitoring sampling strategy and/or methods).*

#### Elaboration on the advice

##### **(i) Overview of existing monitoring programmes**

Several sources of information are available in metadata catalogues. These catalogues document levels of monitoring effort and have been compiled in a number of projects. Generally the catalogues are restricted to information provided by project partners and associated Contracting Parties.

Relevant data catalogues include: (a) the EU DEVOTES (DEvelopment Of innovative Tools for understanding marine biodiversity and assessing good Environmental Status) project with more than 300 benthic-related monitoring activities; (b) the Joint Monitoring Programme for the North Sea and the Celtic Sea (JMP, including the European Environment Information and Observation Network (EIONET)) with more than 100 monitoring activities; (c) the European Marine Observation and Data Network (EMODnet) with more than 500 datasets, some of which include monitoring; and (d) SeaDataNet, with more than 3500 datasets, some of which include monitoring. Links to these data catalogues are found under Sources.

Most of these catalogues contain the broad geographical distribution of the monitoring programmes and whenever possible, the temporal scale/frequency of data collection. However, there are usually no details of survey design (e.g. number of stations, replicates, and statistical robustness) or the appropriateness and standardization of the sampling techniques. These factors are known to vary between nations.

Information on some programmes includes information as to whether formal quality assurance (QA) has been applied, but this has not been collated systematically. It is known that QA schemes vary in their application between and within countries.

**(ii) Overview of existing network of sampling stations and monitoring frequency**

ICES is unable to provide an overview of existing national networks of benthic sampling stations or of monitoring frequencies. At a wider scale, ICES is not aware of any networks of benthic sampling stations that result from collaborations between countries. The existing monitoring metadata catalogues (see (i) above) could be used as a starting point for a request to OSPAR Contracting Parties to provide information on existing networks of sampling stations and monitoring frequency.

**(iii) Evaluation of on-going monitoring in relation to BH1 and BH2**

ICES is unable to carry out this evaluation, partly for the reasons stated in the responses above, but also because the precise needs for monitoring of BH1 and BH2 have not been defined. Most existing monitoring has been designed and undertaken with specific objectives (e.g. operational and/or surveillance) that may or may not meet the needs for monitoring of BH1 and BH2. Preliminary gap and SWOT (strength, weaknesses, opportunities, and threats) analyses were conducted during the DEVOTES project (Patrício *et al.*, 2013). These analyses evaluated current monitoring effort across regions and sub-regions and discussed missing monitoring information, length of monitoring undertaken, and type of monitoring conducted (e.g. passive, mandated, or defined objectives).

ICES advises that OSPAR should commission a specific data project, building on the existing metadata catalogues with the aim of completing an inventory of benthic monitoring programmes within the OSPAR maritime area. The project should consider ways to ensure that the catalogue is kept up to date. Completion of this project would enable OSPAR Contracting Parties to gather the information needed to design the monitoring needed to support BH2 and BH1 requirements and to aid ICES in providing advice.

## Basis of the advice

### Background

The metadata catalogue developed under the FP7 project DEVOTES (Patrício *et al.*, 2013) includes information on benthic monitoring programmes operational in the European seas reported by Regional Seas Conventions and some EU Member States. This provides the basis for assessing the status of marine biodiversity. The catalogue includes information relevant to MSFD descriptors 1 (biological diversity), 2 (non-indigenous species), 4 (foodwebs), and 6 (seafloor integrity). This metadata covered information on: (i) the monitoring that is currently being performed, (ii) why it is being performed, (iii) whether it is fulfilling its objectives (if set), and (iv) the pressures it is linked to.

The JMP searchable database (JMP, 2015; ICES, 2015) contains information on monitoring programmes that EU Member States have reported to the European Commission; it also integrates all information submitted to EIONET. While this database contains much information on relevant monitoring programmes for benthos within the North and Celtic seas, it does not cover any other region within the OSPAR maritime area, neither does it hold information on the geographic extent of monitoring programmes.

EMODnet Biology provides access to data (new and historical) from a wide range of sources. The databases feeding into EMODnet contain data from all regional and subregional seas of Europe, as specified by the Marine Strategy Framework Directive. Main sources of information are international biogeographic datasets, national monitoring programmes, international monitoring campaigns, and datasets recovered from the personal files of scientists, excel spreadsheets and paper documents. Currently, data on biomass, abundance, and gridded abundance of macroalgae, angiosperms, fish, and benthic invertebrates are available.

SeaDataNet is an EU Framework Programme (FP6- and FP7-funded project) that developed a Marine Data Management Infrastructure for the management of large and diverse sets of data deriving from *in situ* and remote observation of the seas and oceans. SeaDataNet brings together data from national data centres with integrated databases of standardized quality. SeaDataNet includes a suite of datasets: physical, geophysical, geological, biological, and chemical parameters, and biological species.

A combination of these four metadata catalogues covers the majority of benthic monitoring programmes in OSPAR waters within EU Member States.

### Sources and references

European Environment Information and Observation Network (EIONET). Web link: <http://www.eionet.europa.eu/activities>.

European Marine Observation and Data Network (EMODnet) Biology. Web link: <http://www.emodnet-biology.eu/>.

ICES. 2015. Report of the Benthos Ecology Working Group (BEWG), 4–8 May 2015, Calvi, Corsica, France. ICES CM 2015/SSGEPD:10. 64 pp.

JMP. 2015. Joint Monitoring Programme for the North Sea and the Celtic Sea. Metadata catalogue available at: <http://jmp.bmdc.be> (username: jmpguest – password: jmpguest).

Patrício, J., Teixeira, H., Mazik, K., Little, S., Elliott, M., Zampoukas, N., *et al.* 2013. Report cataloguing the monitoring networks used within EU Member States. Devotes, Deliverable 1.3. 28 pp. [http://www.devotes-project.eu/wp-content/uploads/2013/10/Deliverable-1.3-Monitoring\\_networks-31-oct-2013.pdf](http://www.devotes-project.eu/wp-content/uploads/2013/10/Deliverable-1.3-Monitoring_networks-31-oct-2013.pdf).

SeaDataNet. Web link: <http://www.seadatanet.org/>.