1.6.6.4 OSPAR request to support the development of common and candidate OSPAR biodiversity indicators for benthic habitats: selection of habitats in support of the development of the Typical Species Composition indicator

Advice summary

ICES provides selection criteria for generating a reduced list of habitats in support of the development of the Typical Species Composition indicator. ICES has not selected specific habitats at this point due to the absence of collated information to support the use of the selection criteria.

ICES ability to answer this request was hampered by a lack of clarity concerning the concepts underlying a Typical Species Composition indicator. There is a need to develop a roadmap that translates conceptual ideas surrounding the Typical Species Composition indicator into sequential stages of analysis that address specific issues in turn. Once this roadmap has been developed, OSPAR will need to commission a targeted data collection programme. ICES suggests that the short-listing process is expanded to cover all MSFD special and predominant habitats.

Request

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

b) Evaluate the applicability of a reduced list of habitats in support the development of Typical Species indicator (BH1). This work should consider those habitats that have previously been identified by the COBAM Benthic experts group. Evaluation should consider data availability, and suggest possible prioritisation of habitats already included in the OSPAR list of threatened and declining habitats.

Elaboration on the advice

ICES provides a list of required and desirable criteria to select appropriate habitats for the development of Typical Species Composition indicators. The criteria are provided with recommended levels of attribution to allow the summarizing of information and prioritization of habitats. These criteria could also be used to identify which habitats the Typical Species Compostion indicator approach may be appropriately applied to when the indicators are operational.

An initial effort by OSPAR to establish the availability of data for specific habitats gathered information from two Contracting Parties only. It was therefore not possible for ICES to apply the criteria and shortlist these habitats. ICES recommends that future requests of this type are supported by formal data calls.

ICES provides suggestions for refining and directing the development of the Typical Species Composition indicator. There is a need to develop a roadmap that translates conceptual ideas surrounding the Typical Species Composition indicator into sequential stages of analysis that address specific issues in turn. This will help express what is being examined (the hypotheses) before suggestions are made on how to test it (the experimental design). ICES suggests that OSPAR benthic experts select one or two habitats and attempt to test the indicator for these habitats. Experience gained should then be used to refine the roadmap and future habitat selection.

ICES ability to answer this request was hampered by a lack of clarity concerning the concepts underlying a Typical Species Composition indicator. ICES suggests that a clear description of the scope, concept, and objective of the indicator be contained within a plan or road map, explaining how Typical Species Composition indicators will be developed and made operational. This would be helpful for all concerned. The road map should translate conceptual ideas surrounding the Typical Species Composition indicator into testable and sequential stages of development with clear analysis objectives. This will help express what is being examined (the hypotheses) before suggestions are made on how to test it (the experimental design).

ICES notes that the data requirements for the initial development of these indicators in even a few selected habitats should not be underestimated: a targeted data collection programme would need to be commissioned to provide information for the adequate clarification of spatial variability (natural and anthropogenically induced), temporal stability (seasonality and long-term changes through, e.g. climate change) and ideally, an understanding of responses to individual pressures.

ICES suggests that the shortlisting process should be expanded to cover all MSFD special and predominant habitats and not just be confined to the COBAM list and OSPAR's threatened and declining habitats (OSPAR, 2008).

Basis of the advice

Background

ICES recognises the technical challenges associated with the development of this indicator are great and the required effort and input to support operationalization across multiple habitats and regions.

Results and conclusions

ICES provides the following criteria and considerations in support of the selection of habitat for the development of the Typical Species Composition indicator.

Habitat attributes required for inclusion within the development programme (initial pass/fail):

1. The habitats should have an operational definition that enables reliable and consistent identification across Contracting Parties.
2. The habitats should be characterized by an assemblage rather than a single species. Typifying/habitat-defining species should not be included in the list of typical species.

Desirable attributes in no particular order (suitability criteria for indicator development/attribution levels are provided in Table 1.6.6.4.1):

3. Habitats with available baseline data upon which to base the selection of typical species (e.g. published studies or units still in a 'natural state') should be preferred for use in indicator development. EUNIS habitats (levels 4, 5, and 6; EEA, 2014) are particularly suitable as most are supported already by a typical species list generated from field observations.
4. Units of a habitat should be present across quantifiable gradients of multiple anthropogenic pressures.
5. Selected habitats should be present in a wide selection of biological and/or geographical zones (bathymetric zones and water masses) within OSPAR regions.
6. Levels of natural variability of the species composition within a habitat can be quantified and considered alongside the anthropogenic response of the species composition within a habitat (as reported by the Typical Species Composition indicator).
7. Habitats with a known sensitivity (in terms of species composition) to specific pressure(s) are more appropriate for indicator development.
8. It should be easy to sample/observe the composition of the species within the habitat (e.g. typical species with large body size or high cover).
9. It should be possible to sample/observe the habitat with non-destructive methods (acceptable minimal impact).
10. Habitat observations are cost-effective to obtain.

Table 1.6.6.4.1 Suggested attributes for the recommended habitat selection criteria in support of the development of the Typical Species Composition indicator.

Criterion	Attribution
1	Pass or reject.
2	Pass or reject.
3	0 = no existing data; 1 = published studies; 2 = standardized lists of typical species associated with a habitat classification scheme.
4	0 = no existing data; 1 = habitat not subject to anthropogenic pressures; 2 = habitat subject to limited anthropogenic pressure; 3 = habitat subject to multiple and influential anthropogenic pressures.
5	0 = no existing data; 1 = habitat present in a few specific locations only; 2 = habitat present in several geographic locations; 3 = habitat common throughout an OSPAR region.
6	0 = no existing data; 1 = natural variability not known or difficult to measure with precision; 2 = natural variability can be established following field observations, 3 = natural variability is known and easily quantified.
7	0 = no existing data, 1 = typical species not considered sensitive or responsive to common and/or influential anthropogenic pressures; 2 = some typical species are considered to be responsive to anthropogenic pressure(s); 3 = all typical species are considered to be responsive to common and/or influential anthropogenic pressures.
8	0 = no existing data; 1 = typical species are small bodied, cyptic, or seasonally absent; 2 = most typical species can be observed readily; 3 = all typical species can be observed readily.
9	0 = no existing data; 1 = sampling would require destructive methods; 2 = sampling does not require destructive methods for observation.
10	0 = no existing data; 1 = sampling costs high (habitats are remote or require specialist sampling equipment); 2 = habitats are moderately expensive to sample; 3 = habitats are easily accessed and observed with widely available survey equipment.

Additional points for consideration during habitat selection:

1. The classification systems referred to during the process of developing BH1 are under development and discrete habitat classes or typifying species may change.
2. Development methods should be tailored to consider the occurrence of local states in community compositions (e.g. special species compositions typical for *Lophelia*-reefs in individual fjords).

ICES suggests that no weighting be applied across these suggested criteria initially – a high total value for a habitat would imply high suitability for selection.

Sources and references

EEA. 2014. EUNIS habitat classification. European Environment Agency, 2014. This report is available as a website at http://www.eea.europa.eu/themes/biodiversity/eunis/eunis-habitatclassification.

ICES. 2015a. Interim Report of the Working Group on Marine Habitat Mapping (WGMHM), 18–22 May 2015, Reykjavik, Iceland. ICES CM 2015/SSGEPI:12. 31 pp.

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OSPAR. 2008. OSPAR List of Threatened and/or Declining Species and Habitats. Reference Number: 2008-6. Available at: http://www.ospar.org/content/content.asp?menu=00180302000014_000000_000000.