Minutes of the Benthic outcomes from the SuperCOBAM workshop

Wednesday the 20th to Friday the-22nd of October 2021

LEF Future Centre, Griffioenlaan 2, Utrecht (Netherlands) + online meeting

N.B.: These minutes complement the minutes of the 19/10/2021 OBHEG meeting (Annex 1), and should be completed by the full Super-COBAM report.

by Anna Lizińska & Laurent Guérin

Attending benthic experts

Physically: Ana García-Alegre (ES), José Manuel González (ES), Laurent Guérin (FR), Anna Lizińska (FR), Stefano Marra (UK), Liam Matear (UK), Petra Schmitt (DE), Cristina Vina-Herbon (UK), Sander Wijnhoven (NL)

Online: Ricardo Araújo (PT), Mats Blomquist (SE), Aurélien Boye (FR), Maria Ana Almeida Colaço (PT), Paul Coleman (IE), Grete Dinesen (DK), Stephen Duncombe-Smith (UK), Marie-Louise Krawack (DK), Filipe Henriques (PT), Axel Kreutle (DE), Yvonne Leahy (IE), Jorge Lobo-Arteaga (PT), Giacomo Montereale-Gavazzi (BE), Karl Norling (SE, ICG-CC), Alexandre Robert (FR), Hans Ruiter (NL, ICG-EUT), Gert Van-Hoey (BE), Kirsty Woodcock (UK).

Key messages on benthic outcomes from this workshop

- The stocktaking of data that is available was progressed and will enable when completed to clearly define area which will be really assessed (and start all indicators draft assessment!).
- Spatial assessment units: First proposal developed, shapefile to be created in next step. Aiming to align for all indicators which will make it easier to present information at the next level, notably the Benthic habitats' thematic assessment and explore links with other components, notably pelagic habitats' thematic assessment.
- Integration of indicators: The conceptual method exists to combine indicators exists (Elliot et al, 2018), and some methodological gaps were also progressed, but in terms of MSFD criteria integration, there is still a conclusion that the Broad habitat type is the last relevant integrated reporting unit, and that there is currently no sense to integrate the different information and results between different pressure type in a single value (D6C5). A dashboard of results of all other criteria contributing to D6C5 would be more relevant, both ecologically, scientifically and for management issues.
- Thresholds Values: this is a very challenging task, further work is foreseen on next steps, but it is not foreseen that Threshold Values will be fully developed by QSR2023. Different regions are at different level of development, both science and policy based questions need to be addressed. BH2a is the only benthic indicator with n agreed threshold. A 'Narrative' for a BH3 threshold has been described, and will be discussed in the next OSPAR relevant meetings.
- We will need to clearly indicate what will be each NEA PANACEA product and what could be a QSR input, because an agreement have to be reached at several OSPAR committees levels and this can be challenging according to QSR2023 timeline. Nevertheless, the Nea Panacea timeline is currently fitted to submit all products end 2022, which would enable submission of all products to end 2022 COBAM and BDC meetings, and agreement in Spring 2023 for QSR production.

- There is substantial progress expected in the benthic habitat OSPAR QSR outputs compared to previous (2017) assessment outputs, recognizing that some state-pressure relationships are still not yet developed.

Main conclusions and actions on benthic outcomes from this workshop

ACTION: BH3 and BH4 leads to clarify with Danish and Swedish experts (Mats and Norbert) if data available (habitats and pressure) in the Kattegat and Skagerrak areas will enable respective assessments.

ACTION: Laurent to contact urgently French responsible to provides the dates to which the French data could be made available for OSPAR.

ACTION: OBHEG to propose and discuss during the next meetings, specific lists of species, related to sensitivities at defined pressure, or functional groups. UK and Activity 2 teams to interact to incorporate relevant sensitivity species lists, notably with Spanish, French and Portuguese teams for Region IV, and in general with experts from any relevant biogeographical (sub)region to be assessed by BH3.

ACTION: Methods to be clearly described in each indicator CEMP document, and clearly highlighting for BH3 what is new compared to previously agreed BH3 CEMP guideline.

ACTION: Further progress and application of these methods to be reported and discussed in the OBHEG future meetings, also with Nea Panacea tasks 3.2 (BH1), 3.4 and 3.5 (BH3 development and scenario) and 3.7 (thematic assessment).

ACTION: Links between indicators, integrated methods and MSFD GES criteria to be clarifie by OBHEG. Petra Schmitt (DE) to send the TG Seabed doc to all group + Silke: *SEABED_6-2021-03rev2_GDArt8-D6_short-draft_20210628.doc*

ACTION: Indicator leads (and teams) to consider biogeographical variation (and related subdivision) of species communities and sensitivities lists of habitat types in each OSPAR (sub)Region when testing or assessing indicators, notably for BH1 and BH2 indicators, and sensitivity data underpinning BH3 and BH4 assessments. A coherence is needed to enable integration between indicators.

ACTION: Benthic, NIS and any other interested expert group lead to plan mixed discussion and potential resources for progressing conceptual integrated methods, based on current respective indicators and assessment methods, to assess the effect of NIS on biodiversity component (as part of biodiversity AND a biological pressure).

ACTION: to all experts to review Emily's Excel file and identify gaps in the measures linked to them biodiversity component.

ACTION: Laurent and Cristina (OBHEG co-chairs) to progress (numerically) this Benthic habitats' thematic assessment draft and share with OBHEG (and Lena) to progress discussion and testing contents at next OBHEG and COBAM meetings.

Co-funded by the European Maritime and Fisheries Fund

AGENDA ITEMS AND MINUTES

SuperCOBAM workshop main goals

SuperCOBAM is intended to support the delivery of the ICG-COBAM biodiversity assessments for the QSR2023 (this means all expert groups and the assessments they produce, not just those supported by NEA PANACEA). It is an opportunity for expert groups to convene and have some dedicated discussion or writing sessions (depending on the need of the expert group). At the same time, SuperCOBAM is an opportunity to exchange information with the other expert groups, align procedures and approaches where needed and discuss topics of a cross-cutting nature. Part of NEA PANACEA is executed by experts from the ICG's on eutrophication and eutrophication modelling (ICG-EUT, ICG-EMO), who will also be present to explore and discuss matters of a cross-cutting nature.

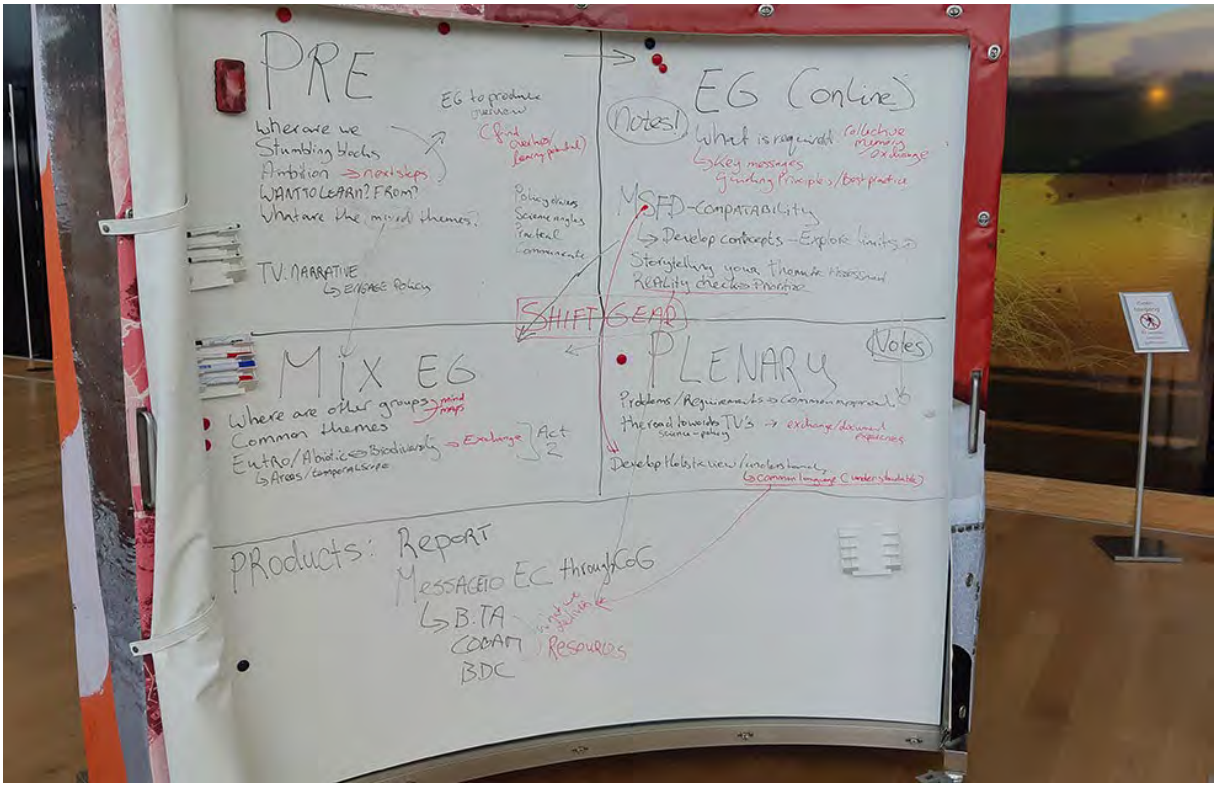
Day 1 – Wednesday the 20th of October 2021

Offline sessions

1. Pre-discussion: SuperCOBAM

This session aimed to discuss and agree about main aims and expected outcomes of this workshop, which are summarized here and in Figure 1:

- To inform each other about ongoing works, stumbling blocks, and to progress common understanding and language.
- To progress methods, also by learning from other groups (methods and spatiotemporal overlaps), keeping OSPAR and MSFD requirements and compatibilities in mind.
- Develop the narratives (story telling) of each thematic assessment. To develop concepts but prioritize what can really be done in the project timeline.
- To communicate results and produce key messages for OSPAR (ICG-COBAM, BiTA, BDC, COG, ICG-MSFD, ICG-QSR, etc), and European and national working groups (Science & Policy), about progress and anticipated products and remaining gaps towards a holistic assessment of the North East Atlantic Ecosystems.



2. Pre-discussion: Assessment Scales and Spatial Integration

The Chair outlined the work plan. For each indicator, it is needed to present and discuss the features connected with state and pressure, as well as the theoretical (concept) and practical (data available) assessment area (region, subregion, part of the subregion, etc). For our works, we need to consider both OSPAR and MSFD marine regions.

Online sessions

3. Expert Group Meeting: update

Benthic group - *connection problems solved after several minutes,* tour de table of all participants.

The OSPAR Benthic Habitat Expert Group (OBHEG) had the opportunity to meet the previous day (See OBHEG 19/10/2021 minutes and presentations) and discuss the progress made for each indicator, notably on the data currently available and the work plans and progress made. Some work was done also to prepare SuperCOBAM sessions. It was decided notably to present and discuss the BH4 (by Petra), a TG Seabed document on assessment scales (by Sander) and the MarESA method (by Liam). About data, an action was already decided the previous day for indicator leads to state in a table on the data currently available (per country and data type), following OSPAR data calls. This will enable to know the real spatial coverage of the future assessment for each indicator.

During discussions in this session, some actions were decided in link with the data:

ACTION: BH3 and BH4 leads to clarify with Danish and Swedish experts (Mats and Norbert) if data available (habitats and pressure) in the Kattegat and Skagerrak areas will enable respective assessments.

ACTION: Laurent to contact urgently French responsible to provides the dates to which the French data could be made available for OSPAR.

Some intersessional works was also done by some indicator leads to produce a table describing each indicator theoretical assessment scale and data requirement (Annex 2).

4. Lena Avellan: OSPAR secretariat information and resources for the QSR

- Presentation by Lena Avellan (OSPAR Secretariat): OSPAR QSR2023 guidance document

This document notably includes a table describing current assessment scales and areas for biodiversity components. One challenge is to discuss/agree on common or nested (ecological) subdivisions of Regions for all integrated assessments. Works should also consider, and be in coherence with, those from ICES and other European working groups.

For benthic habitats, the integrated assessment units are currently set at the OSPAR Region scale. During this workshop, works will be done to discuss the need, opportunity and consequences to further subdivide these Regions, notably according to a recent TG Seabed document (See presentation by Sander in the following session), based on biogeographical/hydrological areas. It would be interesting, if possible, to have similar or nested assessment areas between benthic and pelagic habitats.

5. Expert Group: Assessment Scales and Spatial Integration

Benthic group

- Presentation by Sander Wijnhoven (NL): Biogeographic subdivision proposal, by TG Seabed and ICES, of marine assessment units for OSPAR and MSFD

During the discussion, it was recognised that subdivision based on pelagic and ICG-EUT marine landscapes would make sense for benthic habitats as it implies specific biogeographical context. The potential consequences for each indicator was discussed:

- BH3 and BH4: Assessment are done at (Broad) Habitat Types scales, for each OSPAR Region. Thus, further subdivisions will not affect the resulting disturbance/lost maps, but rather the percentage of disturbance/lost per habitat type and per assessment unit (Region versus subdivision of Region).
- BH2a: Assessment is done at the Water Framework Directive waterbodies scale. Further

subdivision will thus not affect the resulting waterbodies quality status, but rather the number and proportions of GES/not GES waterbodies per assessment unit.

- BH1 and BH2b: These indicators are at even finer scales (benthic habitat communities), and the natural composition of the benthic communities may vary depending on the biogeographical context and area. It was not planned in the current Nea Panacea timeline, but it should be tested in the future, if sufficient data are made available, about the applicability and variation of results (including reference lists of species, biological traits) of these two indicators between biogeographical area (e.g. subdivision of Regions according to TG Seabed proposal).

As a first conclusion, it was agreed that subdivision of marine Regions, according to biogeographical areas influencing benthic communities (e.g. TG Seabed initiative), would make sense for benthic habitat assessments. Nevertheless, the exact delineation and source of subdivision have to be further discussed during this workshop. These subdivisions should then be tested, notably by studying the variations of the results of fine scale indicators (BH1, BH2), to be able to conclude. This will be considered in the works on data planned, but this test at OSPAR maritime area scale is not planned currently and will need extra resources, data and time to be conducted.

Offline sessions

6. Mixed Expert Groups:Assessment Scales and Spatial Integration

This session was the opportunity to open the discussion on assessment scales and biogeographical subdivisions of Regions to a wider audience, with experts from other biodiversity groups. Several subgroups were meeting in parallel. The following points are resulting from the discussion of a subgroup attended by the author of these minutes.

For benthic habitat, even if known through models and abiotic parameters, the current limitation of sampled benthic communities' available data (including lack of monitoring), and resources, in many OSPAR maritime areas, limit the capacity to model or even test and clearly characterize different biogeographical subdivisions. For MSFD and management of anthropic pressures, the risk-based approach is recommended and drive the monitoring, but for characterizing reference natural communities, biogeographical areas, and climate change effects, additional monitoring is also required.

For Fish, assessment is done pragmatically at regional scale, but ideally, it would be interesting to test subdivision of biogeographical or specific area (e.g. shallow waters, islands archipelago, etc.), as it influences fish communities and populations.

For marine mammals, it would be useful to scale down information observed at wide scales, also for population distributions' models.

For pelagic and food webs, the development and use of ecological indicators, based on model

approach, would help to better understand and define ecologically relevant assessment units for marine ecosystems.

For integration between biodiversity component, common or nested assessment units are prerequisites. It would be interesting to test the current overlapping of the different assessment units used for indicators of the different biodiversity components. The gaps in data coverage will probably limit this exercise, but some areas could be identified where to compare assessment units at finer scale. It would also help to identify areas which requires new data acquisition, notably in specific biogeographic areas, risk areas, or biodiversity hotspots.

It was recognised that this study was not planned initially for SuperCOBAM and requires more time, data and resources to be done properly. Its technical aspects and cooperation between experts should be identified and described for next steps and action plan resulting from Nea Panacea for QSR2023. Nevertheless, attending experts expressed the need to further progress this important step, even conceptually. As time was lacking to progress this task, it was planned to be further discussed and progressed later to another dedicated session of this workshop.

ACTION: Another dedicated session to progress this important preliminary step towards integration between indicators will be proposed to be held during this workshop.

About spatial and indicator integrations (next step and in preparation of day 2 dedicated sessions), it was highlighted that current approaches and use of "integration" term is quite different between mobile species and habitats, even conceptually.

Benthic habitats developed a conceptual integration between benthic indicators (EcApRHA project deliverables 2.3 and 4.1; Elliot et al., 2018), to assess the state per habitat type. There is no integration between habitat types, which is the final assessment reporting unit. The effects of each specific pressure type, for which data are available, are currently assessed separately, and cumulative effects of pressure is still a scientifically challenge.

Pelagic habitats do not consider currently any integration between pelagic indicators.

Food webs is by definition cross-cutting/integrating several biodiversity components and scales, but indicators are currently assessed separately and most of them focussed on one biodiversity component.

Mobile species (mammals, birds, fish) developed "decision rules" for integration within or between indicators, which is different of what is called integration for benthic habitats. For endangered species and commercial species of fish, the "One Out, All Out rule" (OOAO) is often used as a decision rule for integration between indicators.

Non-indigenous species are currently assessed at OSPAR by a unique indicator (NIS3), which de facto prevent any integration method for now.

7. Plenary discussion:Assessment Scales and Spatial Integration

The main key message from experts' subgroups were reported, and following key messages the next day by the organisation team:

- Meeting in person, and mixing expert groups is very fruitful and efficient, improving also coherence and mutual understanding. This should happen more often, and for longer work sessions, and ideally by dedicated resources planned by OSPAR.
- More works is needed to conclude on, and especially define, subdivisions of OSPAR regions relevant for all or several biodiversity components. The technical aspects were discussed and this task should be part of a future action plan. Nevertheless, the conceptual and potential subdivision will be further worked during this workshop.
- The ground-truth data currently available limits the models and possibility to characterise relevant biogeographical assessment units for several components, notably for (offshore) benthic and pelagic habitats' species communities.
- Whatever the assessment units or integration methods developed, it will be important to clearly communicate underpinning ecological reasons, and limits, for its use under MSFD or any other environmental management issue.

Day 2 – Thursday the 21st of October 2021

Offline sessions

1. Activity 2 café - A NEA PANACEA-specific event aimed at cross-cutting aspects of the project

The Nea Panacea activity 2 is transversal between ecosystem components, as it is focussing on assessment scales, eutrophication and food webs aspects, investigating tools to link pressure and state indicators in the context of the climate change. Among these tools, works are planned using satellite observation data (JMP EUNOSAT) and model analyses (LiACAT and ENA). These dedicated SuperCOBAM sessions aims to present planned tasks and investigate with OSPAR indicator leads which data could be relevant and available, and where, and how to link works planned.

- Presentation by Silke Eilers (NL): LiACAT and ENA models

The participants split in three "world café" subgroups, where discussion was chaired by Activity 2 task leads, and focussing respectively on satellites observation, eutrophication assessment, and models. The results of this session will be detailed in the full SuperCOBAM workshop report.

2. Pre-discussion: Integration of indicator results

As a logical next step after the preliminary required assessment scales and units, some discussions already started the first day on integration. The activity 2 concrete tasks will also reinforce the link

between biodiversity components assessment. After the presentation later today to all participants of ongoing works in OSPAR expert groups ICG-EcoC (DAPSIR and bow-tie approaches) and CCEG (climate change), the chairs of expert groups and mixed subgroups will encourage participants to further works on these aspects of integrating indicators results, considering all this context.

Online sessions

3. **ICG-EcoC: AdrianJudd**

- Presentation by Adrian Judd (ICG EcoC): Drivers, Activities, Pressures, State, Impact, Response (DAPSIR) and "Bow-tie" approaches for the OSPAR biodiversity thematic assessment.

Discussions after this presentation was about what ICG-EcoC and ICG-COBAM could do for each other, to be further discussed in following groups' meetings.

4. **CCEG: Stephen Dye**

Session cancelled (Participant not available)

5. **Expert Group: Integration of indicator results**

Benthic group

In the following of the previous day discussion (and today sessions), and as new methodological elements to be considered for integration method between benthic habitats' indicators, it was decided to discuss around two recent national initiatives from UK (MarESA method) and Spain (integration of BH1 and BH3, according to Elliott et al, 2018).

- Presentation by Liam Matear (UK): the UK initiative on the spatial aggregation of sensitivity of habitats: the MarESA method

This method is interesting as it proposes a compilation of known (and unknown) sensitivity categories, from species communities' level to Broad habitat types, which is one of the key methodological gaps highlighted in the current integration method (Elliot et al, 2018). It has the advantage to keep all finer scale information available, but the rule how to set a value (or range of values) to broader scales is still to be defined. Several options exist (OOAO, average, percentile, etc.) and would need more discussion depending of the aim and context of assessments.

These compiled sensitivity categories per habitat type may also contribute to define "confidence maps", based on the more or less complete level of knowledge, per habitat type, on species communities' sensitivities and variabilities. However, it was acknowledged that, whatever available

and accurate would be a confidence map, in general, most of people will first look at the disturbance map, and few will make the effort to relativize the results according to the related confidence.

Before the next presentation on this integration methodological gap, a slide was presented to remind or present to new OBHEG members the method developed during EcApRHA and OBHEG, and as published in Elliot et al (2018).

- Presentation by Laurent Guérin (co-chair): EcApRHA Benthic integration method

The Spanish colleagues presented a national initiative based on this method and recent indicators progress.

- Presentation by José Manuel González (ES): The Spanish initiative on fine scale/wide scale integration between BH1 and BH3

This method, applied for Spanish MSFD assessment, and submitted for publication in Marine Policy, is also interesting as based on OBHEG previous works and proposing a simple and quantitative method for combining both indicators results. However, uncertainties linked to both indicators (sensitivities species lists, spatial resolution of state and pressure data, etc.) are also combined. With BH1, the species list used is a key element and depends of the (biogeographical) assessed area considered. For example, there is a need to include Region IV specific lists to BH3 matrices to enable its assessment in Region IV.

As a conclusion, it was acknowledged by the group that these two methods are both progressing the thoughts on the benthic indicators' integration methods, even if some methodological details still need to be clarified and tested to develop a fully operational methodology. These methods address different methodological gaps and could even be complementary if adapted in the integration method context. Respective UK and Spanish teams were encouraged to report progress on this at next OBHEG, where discussion on these aspects should be also progressed with the perspective of (sub)regional integrated assessments methods.

For MSFD, the recommendation discussed in TG Seabed should also be considered, and interactivity with OBHEG works facilitated. Each indicator, and integration methods, contribution to MSFD criteria should be clarified. A draft document was notably cited as important for integration rules.

ACTION: OBHEG to propose and discuss during the next meetings, specific lists of species, related to sensitivities at defined pressure, or functional groups. UK and Activity 2 teams to interact to incorporate relevant sensitivity species lists, notably with Spanish, French and Portuguese teams for Region IV, and in general with experts from any relevant biogeographical (sub)region to be assessed by BH3.

ACTION: Methods to be clearly described in each indicator CEMP document, and clearly highlighting for BH3 what is new compared to previously agreed BH3 CEMP guideline.

ACTION: Further progress and application of these methods to be reported and discussed in the OBHEG future meetings, also with Nea Panacea tasks 3.2 (BH1), 3.4 and 3.5 (BH3 development and scenario) and 3.7 (thematic assessment).

ACTION: Links between indicators, integrated methods and MSFD GES criteria to be clarified by indicator leads and OBHEG. Petra Schmitt (DE) to send the TG Seabed doc to all group + Silke: *SEABED_6-2021-03rev2_GDArt8-D6_short-draft_20210628.doc*

Offline sessions

6. Adrian Judd:Provisions

The results of this session will be detailed in the full SuperCOBAM workshop report.

7. Mixed Expert Group:Integration of indicator results

For this session, expert groups' chairs summarized and shared information on what was discussed in respective groups, about assessment scales and integration methods.

For benthic habitat, one of the common assessment unit is the broad habitat (or other specific) type. The assessment units are thus nested in the assessment at Region or subregion levels. However, the biogeographical specificities of species communities (finer biological scale) and related sensitivities to each pressure type may influence each indicator assessment, per habitat type. Before any operational quantitative integration between indicators, the use of each of them and associated species and sensitivities lists should be tested and fixed. All indicator leads and teams are encouraged during them future works (short or longer term) to test this, notably between subdivision of the current OSPAR Region as discussed during this workshop and future works in OBHEG.

ACTION: Indicator leads (and teams) to consider biogeographical variation (and related subdivision) of species communities and sensitivities lists of habitat types in each OSPAR (sub)Region when testing or assessing indicators, notably for BH1 and BH2 indicators, and sensitivity data underpinning BH3 and BH4 assessments. A coherence is needed to enable integration between indicators.

A discussion started about integration perspectives for non-indigenous species (NIS). An expert remind that this discussion took place during a previous mixed group workshop (SuperCOBAM, June 2019, Paris). A preliminary idea was to combine the distribution/abundances of targeted NIS invasive species (as MSFD D2C2 criteria, biological pressure) to habitat maps, with a similar approach that BH3 and Elliot et al (2018) integration method, to produce a disturbance maps of habitats (as MSFD D2C3 criteria). Some functional aspects and case studies by the Food Web expert groups were also discussed. This should be further discussed in both groups, or better, together, to check relevant data (or area with data) available, and additional resources and work plan to test this. The consideration of NIS in benthic communities' lists, both for sensitivity to pressure, resistance/resilience and related biotope

structure, functional groups and dynamics. These technical works are not possible during Nea Panacea and OSPAR QSR2023 timelines, but is identified as a perspective for future inter-component and experts' groups works. These perspectives could also be discussed and reported by experts in other working groups (e.g. TG Seabed, ICES, etc.)

ACTION: Benthic, NIS and any other interested expert group lead to plan mixed discussion and potential resources for progressing conceptual integrated methods, based on current respective indicators and assessment methods, to assess the effect of NIS on biodiversity component (as part of biodiversity AND a biological pressure).

8. Plenary discussion:Integration of indicator results

For this session, expert groups' chairs summarized and shared information on what was discussed in respective groups, about assessment scales and integration methods.

The draft results of the discussions on potential subdivision of OSPAR subregions, notably for benthic habitats, is presented in the Annex 3.

Evening event: Dinner at the Green House Restaurant

https://www.thegreenhouserestaurant.nl/about-the-green- house/

Day 3 – Friday the 22nd of October 2021

Offline sessions

1. Activity 2 café - A NEA PANACEA-specific event aimed at cross-cutting aspects of the project.

After the verbal presentation of the aim of this session, and file template send by email, indicator leads were invited to summarize in a wall the state of development and policy acceptation and implementation of respective indicator thresholds. The results of this session will be detailed in the full SuperCOBAM workshop report.

ACTION: Indicator leads to send to Lisette requested filed file per indicator, describing the respective narratives.

2. Pre-discussion: Threshold Values and Thematic assessment

The previous session highlighted the very various stages of development of thresholds between indicators. For habitats and food webs, they are mostly still at a conceptual stage. As big progress was made previous days in mutual understanding and options for assessment scales and

integration, and as these stages are required to discuss about thresholds setting, it was decided by some experts (notably benthic and pelagic) to dedicate the 3rd day session to further progress this and thematic assessment, instead of the initially planned thresholds. For benthic habitats, dedicated meetings were already planned in the following weeks, to discuss thresholds specifically, and will contribute later on this topic.

Online sessions

3. **Response/Measures:Emily Corcoran**

In the context of the DAPSIR approach applied to thematic assessments, the "R" is linked to measures. This specific task was presented by the OSPAR contractor, Emily Corcoran.

Presentation Emily Corcoran: The "Response" part of the QSR2023 thematic assessment: workplan and ongoing inventory of measures per biodiversity component.

ACTION: All experts to review Emily's Excel file and identify/forward her gaps in the measures linked to them biodiversity component.

4. **Lena ex machina**

Lena (OSPAR secretariat) had the stage to address the questions that were raised during the workshop. This is a follow-up of day 1 and a preparation to day 3 following sessions. For benthic habitat, it was proposed to discuss on the structure of the benthic habitats' thematic assessment, and Lena kindly agreed to participate to the Benthic Habitat expert group to present her draft proposal and work on it with benthic experts.

5. **Expert Group: Thresholds values**

Benthic group: Thematic assessment, according to assessment scales and integration

Discussion started around the drawn draft proposal presented by Lena of the structure of the "State" part of the DAPSIR benthic habitats' thematic assessment (Figure 2). In the light of previous discussion on assessment scales, subdivision of regions and integration, this proposal was received by the expert group as a very good structure, compatible with all indicators and previous discussions, and making also much clearer and concrete what to produce as a deliverable for the QSR2023. The main elements of this structure (also compatible with MSFD requirements) is about assessments per:

- OSPAR (sub)Region (sub to be further discussed through biogeographical previous are discussed)
- (Lines) Broad habitat types
- (Rows) Indicator results and/or related pressure type assessed (by each indicator)

During this discussion, it was made clear that there would currently make no sense (both ecologically, scientifically and for management issue) to merge the values from each indicator and pressure types (rows) to a unique value (MSFD D6C5 criteria) per habitat type, and it would be better to have all rows values available as a dashboard, to identify specific impacts… and gaps in state/pressure relationships currently assessed.

According to the big gaps (data and common indicator) in Regions I and V, there are currently initiative to inform them respectively by contributions from the Arctic Council and ICG-POSH (for listed habitats).

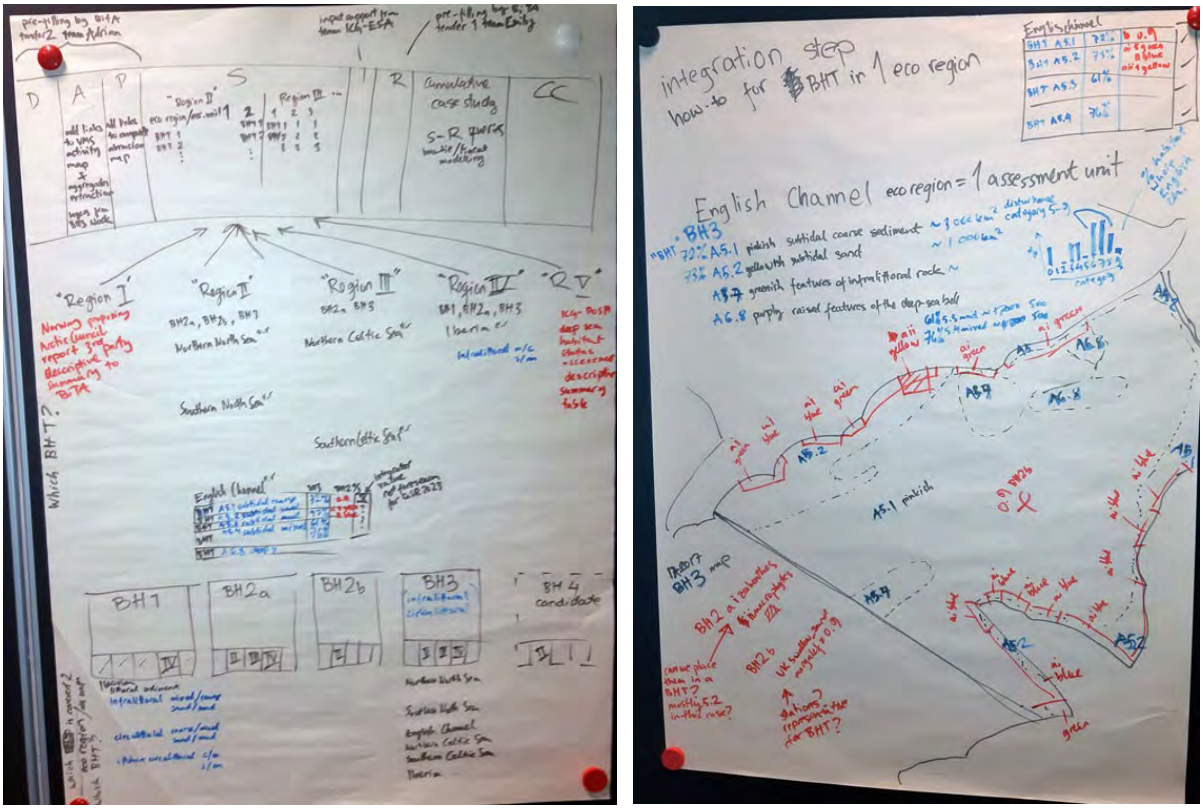


Figure 2: First and initial draws by Lena Avellan© of a proposed structure for the benthic habitats' thematic assessment

About combining indicators maps and assessments results (See the right part of Figure 2), by testing it conceptually in a subregion, it was recognised that there will be quiet few overlap, at least between BH2a (very costal waterbodies) and BH3 (offshore abrasion by fisheries, with gaps on very coastal fishing boats activity). Assessment of BH1 (BISI), BH2b and BH4 will be limited to parts of the Region II and should be tested when available. Same for the BH1 (SoS) assessment in Region IV, where there is already an initiative to combine BH3 and BH1 assessment here as a case study for integration between these indicators.

As a conclusion, this structure seems promising but should be further tested when all draft indicator assessment will be available, hopefully next Spring 2022.

ACTION: Laurent and Cristina (OBHEG co-chairs) to progress (numerically) this Benthic habitats'

thematic assessment draft and share with OBHEG (and Lena) to progress discussion and testing contents at next OBHEG and COBAM meetings.

6. **Mixed expert group:Thresholds values**

For this session, expert groups' chairs summarized and shared information on what was discussed in respective groups, about assessment scales and integration methods.

For benthic habitat, it was recognised that there is currently only BH2a with agreed thresholds (through the benthic biological quality elements of the Water Framework Directive) and discussion for other indicator are currently at a preliminary stage, requiring more methodological development and to be tested by scenario when draft assessment will be available. There are notably some plans on this for BH3 through Nea Panacea tasks 3.4 and 3.5. Nevertheless, progress made, presented and planned during these 3 days on indicator method and assessment development, assessment scales and integration, and thematic assessment are definitively building stronger foundation to enable in the future discussion and testing on benthic indicators' thresholds options and values.

Offline sessions

7. **Emily Corcoran (measures): provisions**

The results of this session will be detailed in the full SuperCOBAM workshop report.

8. **Lisette Enserink (thresholds): provisions**

The results of this session will be detailed in the full SuperCOBAM workshop report.

9. **Plenary discussion:Conclusions and take away key messages**

The workshop finished by a plenary session of all physical participants, trying in live to produce key messages about the outcomes of these 3 days workshop:

Pelagic experts

- D1C6 is not appropriate, justified with some bullet points, to be considered over the weekend
- Threshold values; might not be possible to develop so aiming for qualitative description on what is good status and what is not
- Spatial assessment unit: go for COMP4 eurosat units, further actions include exploring classifying by type
- Integration; SOMETHING

Benthic experts

- The stocktaking of data that is available was progressed and will enable when completed to clearly define area which will be really assessed (and start all indicators draft assessment!).
- Spatial assessment units: First proposal developed, shapefile to be created in next step. Aiming to align for all indicators which will make it easier to present information at the next level, notably the Benthic habitats' thematic assessment and explore links with other components, notably pelagic habitats' thematic assessment.
- Integration of indicators: The conceptual method exists to combine indicators exists (Elliot et al, 2018), and some methodological gaps were also progressed, but in terms of MSFD criteria integration, there is still a conclusion that the Broad habitat type is the last relevant integrated reporting unit, and that there is currently no sense to integrate the different information and results between different pressure type in a single value (D6C5). A dashboard of results of all other criteria contributing to D6C5 would be more relevant, both ecologically, scientifically and for management issues.
- Thresholds Values: this is a very challenging task, further work is foreseen on next steps, but it is not foreseen that Threshold Values will be fully developed by QSR2023. Different regions are at different level of development, both science and policy based questions need to be addressed. BH2a is the only benthic indicator with n agreed threshold. A 'Narrative' for a BH3 threshold has been described, and will be discussed in the next OSPAR relevant meetings.
- We will need to clearly indicate what will be each NEA PANACEA product and what could be a QSR input, because an agreement have to be reached at several OSPAR committees levels and this can be challenging according to QSR2023 timeline. Nevertheless, the Nea Panacea timeline is currently fitted to submit all products end 2022, which would enable submission of all products to end 2022 COBAM and BDC meetings, and agreement in Spring 2023 for QSR production.
- There is substantial progress expected in the benthic habitat OSPAR QSR outputs compared to previous (2017) assessment outputs, recognizing that some state-pressure relationships are still not yet developed.

BiTA query on State chapter content

- BiTA query on State chapter content: Structure and components has been discussed and clarified. Post-meeting, would be good if experts could go into the 0301_doc in BiTA on sharepoint to fill it in.
- Bow-tie / ICG-EcoC and LiACAT approach, good discussion to clarify how they link up, follow-up on the agenda to continue the discussion.

Bow-tie & LiACAT

- Good discussion to clarify how they link up, on the agenda to continue the discussion

General comments

- Joining and mixing groups (such as biodiversity and eutrophication) in a physical meeting was very successful, this should be taken into account in the future and that such meetings should be resourced from OSPAR Contracting Parties.
- It was considered extremely fruitful to have mixed expert group discussions. We should consider back-to-back meetings for expert groups to allow for more mixing.
- Topics are dense and complex, difficult to come to closure on all topics so maybe need to focus on one topic that can be closed and concluded on in the future.
- QSR timelines are pressed, important to remember that NEA PANACEA should also have time and space to explore new approaches for example on food webs and be part of the project deliverables even if not QSR 2023 products.
- Come forward with proposals for what topics can be best handled at ultraCOBAM by those who will be invited to that meeting. UltraCOBAM will be physical meeting with biodiversity experts.
- Hybrid superCOBAM has been inclusive which is good, but it is also dragging down the live physical event. The ultraCOBAM would be fully live.

Annex 1: Minutes of the OBHEG 19th of October 2021 meeting

20211019_OBHEG meeting Actions and M (Embedded pdf file)

OSPAR COMMISSION
Protecting and conserving the North-East Atlantic and its resources

OSPAR QSR2023

NEA PANACEA
North East Atlantic project on biodiversity and eutrophication assessment integration and creation of effective measures

Co-funded by the European Maritime and Fisheries Fund

Annex 2: SuperCOBAM initiative to start a table on some indicators to describe and compare their theoretical assessment scales and data requirements

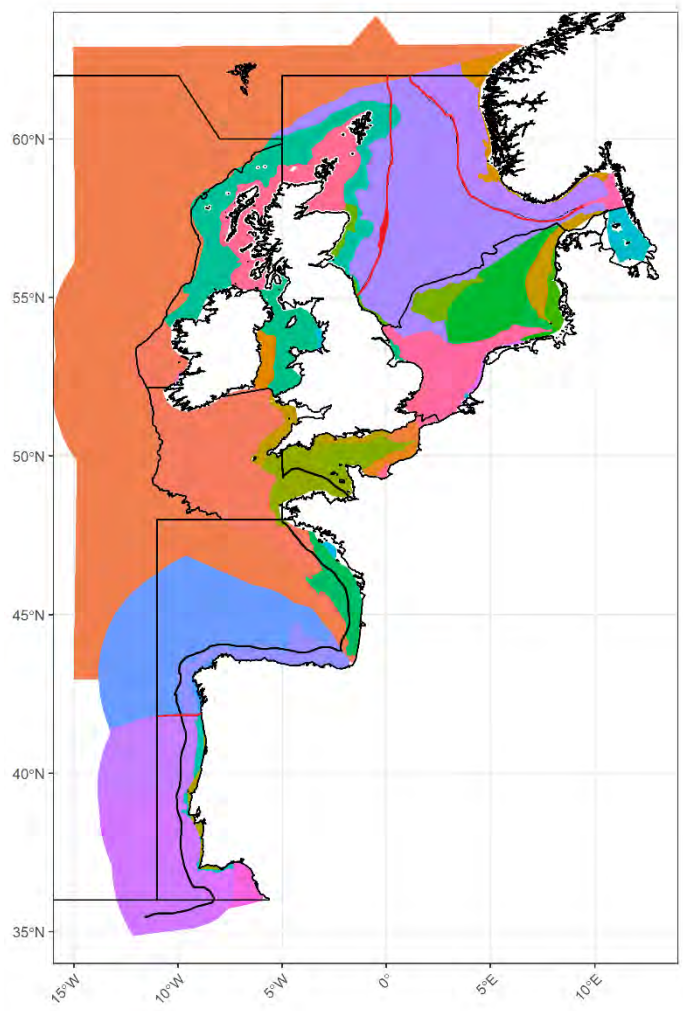
Indicators assessment scale_HB_ (Embedded Excel file)

OSPAR indicators: Data requirements and assessment scales

Indicator	Biodiv component	Pressure(s)?	Theoritical assessment scale	Type of Data (data calls & requests)	Data = 2022 pragmatic assessment area	Comment
BH1	community -> typical species	Any but species list adapted to pressure type	(biogeo) subdivision of region	Stational, several countries from Regions II, III, IV	(part of?) Region IV + (south) part of Region II (where commonly agreed + limited resources)	Action Laurent = check with FR "chantier collecte de données" for FR data BH1/BH2b
BH2a	community some coastal habitats	nutrient+organic enrichment (eutro)	coastal waterbodies	EEA WFD Database (to be completed by UK national data post-2017)	Coastal waterbodies region II, III, IV (data for all coasts, but political)	Action Anna = check with national experts/WFD contacts, if waterbodies shapefile are ok, and then after, if benthic quality results are ok and complete (after
BH2b	community	abrasion by fisheries	(biogeo) subdivision of region	Stational, several countries form Regions II, III, IV	South part of Region II (where commonly agreed + limited resources)	Action Laurent = check with FR "chantier collecte de données" for FR data BH1/BH2b
BH3 (abrasion fisheries)	Broad HT (+ OHT?)	abrasion by fisheries	OSPAR region	BHT EUSeamap 2021 + VMS abrasion (2021)	Offshore Region II, III, IV (data all region but political)	Spanish data in, but not PT = issue for part of Region IV where PT fleet operate with bottom trawling + VMS boats
BH3 (aggregates)	BHT? OHT?	aggregates extraction	(Coastal?) Areas where aggregate activities occurs	BHT EUSeamap 2021 + aggregate data call ongoing (2021)	Offshore Region II, III, IV (where data available)	
BH4 (~~cumulate~~ multi-activities)	Broad HT (+ OHT?)	Several activities (See DPSIR theatic)	(Coastal?) Area where assessed activities occurs	BHT EUSeamap 2021 + VMS abrasion (2021) + aggregate data call ongoing (2021) + Wind farms + etc…	All Region II including Channel (where pilot agreed + limited resources)	
PH1FW5	community - functional groups	climate change, eutrophication, maybe fishing	(biogeo) subdivision of region	Stational and Continuous Plankton Recorder, several countries from Regions II, III, IV	**Regions II, III, IV though there are some areas that may not have data**	**Still waiting on FR data. CPR data will be ready to use.**
NIS3	species (of taxonmic groups)	Is a (biological) (source of) pressure	*[(biogeo) subdivision of?]* region	National new introduction recorded per time periods	To be informed by Peter S (data available, works plan) and discussed through NIS-EG (relevant scale)	Action Laurent = check with FR "chantier collecte de données" for FR data NIS3
SuperCOBAM: Biogeographic subdivision of regions still to be decided, in link with marine pelagic landscapes (See TG Seabed/ICES proposal) to merge assessments for several issues (OSPAR, MSFD, national, etc)						
Activity 2 (Silke) on Dogger bank : UK data = Stefano to check if Dogger bank data under BH1 call are included, and then can be used for FW to check also if biomass is a parameter in these data)						
Kategatt/Skategatt = poor definition for habitats maps = limitation to apply BH3 and BH4. Data exists but still confidential. Cristina/Liam to check with Norbert how to solve this if possible to solve this in time for BH3/BH4 assessment needs						

Annex 3: Draft results of the discussions on potential subdivision of OSPAR subregions, notably for benthic habitats

Red lines = to be decided, needs further national consultation to settle



- English channel as in IA2017 BH3 (note OSPAR Region II/III boundary change to align with MSFD sub-area)
- Southern North Sea as in IA2017 – but double check exact line to see if it can be aligned with ecoregion of ICG-EUT/pelagics line, check whether aligned with the bird-boundary as well
- Northern north sea 1 unit as in IA2017 or 3 as proposed by TG Seabed? CONFIRM if we are to ALIGN WITH MSFD sub-region boundary in the north?
- Celtic seas north as in IA2017 – CONFIRM if we are to ALIGN WITH MSFD sub-region boundary in the **north** and **westwards to 200nm**?
- Celtic seas south as in IA2017 - CONFIRM if we are to ALIGN WITH MSFD sub-region boundary in the **north** and **westwards to 200nm**?
- Iberia – split along 800m depth contour in shallow/deep, then split horisotnally (keep where it is now ie. ICG-EUT/pelagic boundary alignment OR move a bit south to align with TG Seabed proposal) ADD a red line for Cadiz?