

ULTRACOBAM
WORKSHOP

NEA
PANACEA

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

Workshop Summary

14-16 June 2022

at Rijkswaterstaat LEF Future Center, Utrecht (NL)



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and Water Management

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Preface

You are reading the summary report of NEA PANACEA's UltraCOBAM workshop, which was held from 14 to 16 June 2022 at Rijkswaterstaat's LEF Future Center in Utrecht, the Netherlands. Participation of this workshop consisted of 50 persons that were physically present and an online group of 6 persons for selected hybrid elements.

During these three days the participants worked towards the delivery of thematic assessments (integrated assessments rather than indicator assessments) of biodiversity / ecosystem components in the North East Atlantic Ocean for [OSPAR's](#) Quality Status Report due in 2023. These thematic assessments in turn can be used to feed into the reporting for EU's Marine Strategy Framework Directive (MSFD) for those OSPAR Contracting Parties that are also EU member states. This MSFD input is not limited to the integrated assessments of the various ecosystem components, but also includes coherent information on societal drivers, resulting human activities, associated pressures, ecosystem services, policy responses and climate change aspects, all which were very much the topic of discussion during this workshop.

The workshop was organized by the NEA PANACEA project (funded by EU's DG Environment) with support from Rijkswaterstaat and the LEF future center. The organizing team consisted of NEA PANACEA's Activity 5 (Evert Jan van den Berg, Lyke Bosma, Lisette Enserink and Jos Schilder, during the workshop kindly supported by Mees van der Donk and Eva Varkevisser) with professional support from moderator Marinda Hall.

Because of the structure of the workshop (eight groups having parallel interactions with eight non-biodiversity representatives, in rotating formations) and the focus on producing and reviewing texts there was no central notekeeping to feed a detailed report such as delivered for the SuperCOBAM. Therefore, this report provides an overview of the aims, structure and participants, and reflections by participants. Please refer to the [Thematic Assessments](#) (due to be published in Q4 2023) on Marine birds, Marine mammals, Fish, Food webs, Pelagic habitats and Benthic habitats on the OSPAR Assessment Portal for the products this workshop contributed to.

1 Background and Aims of the workshop

1.1 NEA PANACEA

NEA PANACEA is an EU-funded project in which 8 partners from 5 OSPAR Contracting Parties (Germany, France, the United Kingdom, Spain and the Netherlands) collaborate to deliver biodiversity assessments (both indicator assessments and integrated, thematic assessments) for OSPAR's Quality Status Report ([QSR](#)) 2023. Our focus lies specifically on pelagic habitats, benthic habitats, food webs and marine birds assessments. These assessments can be used by EU member states in the North East Atlantic region to inform their reporting to the EU for the Marine Strategy Framework Directive ([MSFD](#)). We work on the development of new biodiversity indicators as well as on the improvement of existing ones, for example in terms of data flow, indicator operability, expansion of geographical coverage or the development of threshold values. In addition, we explore what the best ways are to integrate multiple indicators to deliver a single integrated assessment of a specific ecosystem component (e.g. pelagic habitats).

NEA PANACEA also pays special attention to the coherence between state (biodiversity) and pressure (most notably eutrophication and climate change) assessments. Examples of questions we address are: Do we assess state and pressure on similar (comparable) scales? Are the threshold values (below or above which "good status" is achieved) for pressure and state compatible? Does the information from state indicator assessments optimally flow into the (integrated) state assessments? To this end OSPAR's biodiversity experts join forces in this project with OSPAR's eutrophication (modelling) experts.

NEA PANACEA also aims to have value for those members of the OSPAR family that are not directly involved. In addition to delivering assessments that are of use to all OSPAR Contracting Parties, and especially for those that are also EU Member States, NEA PANACEA will organize two 3-day workshops in which the wider OSPAR community can interact and work together on the QSR products. We also aim to organize a workshop dedicated to the exchange of experience and information about marine birds between the 4 [European regional sea conventions](#).



1.2 UltraCOBAM

UltraCOBAM is one of the two abovementioned workshops NEA PANACEA delivers in order to facilitate the delivery of OSPAR's biodiversity assessments. It is inspired by 2019's S.U.P.E.R. COBAM workshop in Paris, where all seven expert groups¹ under OSPAR's Intersessional Correspondence Group on Coordination of Biodiversity Assessment and Monitoring (ICG-COBAM) convened to discuss cross-cutting issues and exchange knowledge, experiences and views. UltraCOBAM builds on the progress made during NEA PANACEA's SuperCOBAM meeting (October 2021, Utrecht, NL) and on the MiniPANACEA joint expert group meeting in May 2022 in Madrid, ES, where experts from ICG-COBAM's benthic habitats group, the pelagic habitats group, the food webs group, OSPAR's Intersessional Correspondence Group on Eutrophication (ICG-Eut) co-convenor and representatives of NEA PANACEA's Activity 2 met to discuss coherence in assessment approach and linkages to eutrophication and climate change. Rather than discussing cross-cutting issues amongst ICG-COBAM expert groups primarily, UltraCOBAM focused on interaction between ICG-COBAM expert groups and experts from groups dealing with other topics (for example underwater noise, marine litter, climate change, ecosystem services and economical analyses). These interactions were organized with a special view to deliver the seven biodiversity thematic assessments for the upcoming QSR, thematic assessments being holistic assessments using the DAPSIR framework (Drivers, Activities, Pressures, State, Impact, Response) featuring an integrated assessment of the state of the relevant ecosystem component (marine birds, fish, pelagic habitats *et cetera*). UltraCOBAM also provided an opportunity for the OSPAR secretariat to bring the QSR guidance, requirements and instructions under the attention of the biodiversity experts and for the chairs of ICG-COBAM and BiTA (which oversees the delivery of the biodiversity thematic assessments) to provide steer and support the process. Finally, interaction between eutrophication and biodiversity experts to further the achievement of NEA PANACEA deliverables was on the agenda.

1.3 Aims of the Workshop

The general aim of the workshop, also reflected in the NEA PANACEA project proposal, is to promote interaction of experts working on the ICG-COBAM biodiversity thematic assessments with OSPAR experts working on other aspects of the marine environment, and to allow for exchange between the eutrophication & physical conditions experts from NEA PANACEA and the ICG-COBAM community. While the main focus for this workshop was on delivery of the thematic, integrated assessments (there was another workshop, SuperCOBAM scheduled in 2021 for the indicator assessments), the expert groups were of course at liberty to also continue the thought and exchange process on the current drafts of the indicator assessments.

Because it fitted the aims better, each expert group being at a different stage of development of their products and therefore having different needs, it was decided to give each expert group a good

¹ *Marine birds, Marine mammals, Fish and cephalopods, Food webs, Non-indigenous species, pelagic habitats & Benthic habitats*

amount of time to work autonomously (~40% of the time). The rest of the time was dedicated to interaction sessions with the many non-biodiversity expert representatives (~50%) and plenary elements were kept to a minimum (~10%) to allow for as much work and exchange to be had as possible. All participants stayed at the same hotel, and lunch and dinner were enjoyed collectively to optimize the conditions for networking and informal exchange.

1.4 In this report

As chapter 2 details, the workshop consisted of 12 blocks, during each of which every biodiversity expert group was either working on their products or interacting with pressure experts, climate change experts, ecosystem services experts or experts working on drivers and activities. Up to six 1.5 hour meetings were happening simultaneously at any time. The outcome of all these interactions are not presented here in the form of detailed minutes. Rather, they are reflected in the advancements made on the seven biodiversity thematic assessments and therefore in the final products scheduled to be delivered for the internal OSPAR process by the end of 2022 and published as part of the OSPAR QSR 2023 in autumn 2023. This report features a reflection on the achievements and outcome by all biodiversity expert groups as well as the non-biodiversity experts that participated in chapter 3. In addition, the structure and programme are detailed in chapter 2.

2 Structure, programme and participating groups

2.1 Structure and approach

The central aim of this workshop was to bring together different “silo’s” in OSPAR: The QSR aims for a holistic approach with over a dozen thematic assessments, in which the central theme is regarded in a very wide context, using the DAPSIR framework. This means that if the theme of a thematic assessment is Marine Mammals, it reports specifically for Marine Mammals on societal drivers and human activities; resulting pressures; an integrated assessment of the (change in) state of Marine Mammals; the impact the observed change in state is expected to have on ecosystem services Marine Mammals deliver; and the response (policy) that OSPAR contracting parties have given to mitigate change or improve the state of Marine Mammals in the Northeast Atlantic. Further, an inventory of expected climate change impacts on Marine Mammals is reported in the Marine Mammals thematic assessment. For internal consistency of the QSR it is therefore vital that the Marine Mammal expert group interacts with experts writing the thematic assessments on for example climate change, underwater noise and hazardous substances, who on their turn have to deal with impacts of their pressure on Marine Mammals in their thematic assessments.

It was therefore decided to not only invite representatives of the 7 biodiversity expert groups, but also members of a range of expert groups and intersessional correspondence groups that bring expertise that is relevant for the biodiversity thematic assessments. A query was sent out to both biodiversity and pressure thematic assessment leads to inventory what groups would benefit of interacting at UltraCOBAM. Given the large number of requested interactions that resulted from this query and the fact that the biodiversity expert groups needed also time to work internally both to prepare for the interactions and to advance the products for the state chapter the meeting venue was designed so that every expert group had their own room or niche to work in. Non-biodiversity experts would visit these rooms for 1.5 hour interactions.

In order to provide the best possible support and steer for the experts, members from the OSPAR secretariat were invited as well as the chairs of BiTA, ICG-COBAM and ICG-QSR. These participants were in general available for support and questions and were given the opportunity to discuss the strategy and process for delivering all the components of the biodiversity thematic assessments.

The above led to the design of the workshop programme and meeting venue floor plan as detailed in section 2.3.

2.2 Participating groups

Because the focus of the workshop was on effective discussions, decision-making and productive writing, it was decided not to send an open invitation but to send a targeted invitation to select experts directly involved in leading thematic and indicator assessments. Selection was not done by the NEA PANACEA coordinating team, but by the expert group leads and thematic assessment leads. An invitation was sent to all experts involved in NEA PANACEA (including 3 thematic assessment

leads), and to the leads of the other 4 biodiversity thematic assessments. Further, all 7 thematic assessment leads were asked to identify 2 to 3 experts from their group who they thought would be able to contribute effectively to the workshop and the thematic assessment. These experts were also invited, and when they had to decline an alternative expert was sought. Unfortunately, for the NIS group no member could be found that was able to attend. The NIS group was therefore removed from the programme and the floor plan, but basic support to the work of the thematic NIS assessment lead from the UltraCOBAM community was offered. NEA PANACEA's Activity 2 on physical conditions and climate change were also treated as an expert group for this purpose. This led to the following participant composition for the biodiversity groups:

ICG-COBAM Expert group	Number of participants	Of which involved in NEA PANACEA work
Benthic habitats	9	6
Pelagic habitats	5	4
Fish and cephalopods	3	0
Food webs	2	0
Marine birds	3	2
Marine mammals	4	0
NIS	0	0
NEA PANACEA's Activity 2	5	5
TOTAL	31	17

Selection of non-biodiversity experts was done by the NEA PANACEA coordinating team, based on the query described in section 2.1:

Expertise	Number of participants	Of which involved in NEA PANACEA work
Climate change	1	0
Region I (the Arctic)	1	0
Drivers, Activities & the DAPSIR framework	1	0
Ecosystem impacts, economical & social analyses	2	0
OSPAR secretariat	3	0
Workshop coordination	6	3
BiTA and ICG-COBAM chairs	2	0
Marine litter thematic assessment	2	0
Underwater noise thematic assessment	1	0
TOTAL	19	3

Further, some non-biodiversity experts joined remotely to participate in selected discussions in a video conferencing room set up for this purpose:

Expertise	Number of participants	Of which involved in NEA PANACEA work
Eutrophication thematic assessment	4	0
Climate change thematic assessment	1	0
Human activities thematic assessment	1	0
TOTAL	6	0

2.3 Programme and floor plan

In order to facilitate the many simultaneous exchanges between biodiversity expert groups and non-biodiversity experts a schedule was devised that enabled the non-biodiversity experts to visit biodiversity expert group work stations in succession while providing time to the biodiversity expert groups to prepare for these interactions and discuss internal matters before and in between these interactions. Refer to Figure 1 for more details on the workshop programme. The main aim of the workshop was to facilitate this type of interaction and promote internal expert group-discussions so the amount of plenary elements was kept at a minimum. The meeting was kicked off on the morning of day 1 with a small plenary session in which the aims and the process of the workshop were explained to the participants, and the group was given a tour of the facilities. On day 2 the participants were offered a plenary presentation by a representative of EMODNET to showcase the resources available to the OSPAR and MSFD expert-networks and the most recent developments concerning these resources. On day 3 there was a BITA meeting during lunch to do a stocktaking of progress and offering the conveners an opportunity to elaborate on the time lines and deadlines until the end of 2022, when OSPAR's BDC (Biodiversity Committee) was to sign off on the biodiversity thematic assessments. We ended the workshop on day 3 with a plenary wrap-up to highlight briefly to each other our achievements, advancement and points of attention for the near future.

Coffee breaks, lunches and dinners were enjoyed collectively, providing opportunities to strengthen the ties in the network of OSPAR experts.

The LEF Future Centre is a large (~5000 m²) venue which is very flexible in its layout, or floor plan, so it allowed us to create clearly separate working niches for all the expert groups, the non-biodiversity experts, NEA PANACEA's Activity 2 and the OSPAR secretariat representatives and ICG-chairs while maintaining an open-plan character that invited crossing over and discussing. Some additional silent work stations were available for experts that temporarily needed to attend other matters. Figure 2 gives an impression of the floor plan created for this specific meeting.

A so-called padlet (padlet.com) was designed (Figure 3) which was running on a laptop in every room and was being projected in multiple places at the venue. The padlet did not only allow for internal tracking and planning of the workshop activities within expert groups, by being able to view other groups' work flows it also allowed groups to inspire one another and keep tabs on each other's progress. Some groups were more keen on using the tool than others.

Every meeting and working zone featured posters to inspire discussion (or remind experts of tasks ahead) when it comes to delivering the QSR thematic assessments, as well as work that needs to be picked up after delivery of the QSR (the OSPAR Science Agenda update). A copy of these posters can be viewed in Figures 4 and 5 below.

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	From	To	Benthos	Pelagic	Food webs	Fish	Mammals	Birds	Activity 2	Others
	1800	to 2000	Everyone invited to have dinner in the hotel restaurant at time that suits them							
	1900	to 2200	Opening mixer / drinks in the hotel bar							
Day 1 (14 June)	830	to 900	Participants arrive and get their entry passess for the building							
	900	to 930	Plenary welcome, go through practicalities, schedule, discuss the aims and desired outcome and products							
	930	to 1000	All teams find their room, get installed and plan their workshop (use Padlet!)							
	1000	to 1030	All teams find their room, get installed and plan their workshop (use Padlet!)							
	1030	to 1100	Coffee break							
	1100	to 1130		HA TA: Terence Ilot			Gro / NO: Region I			
	1130	to 1200								
	1200	to 1230								
	1230	to 1300	Lunch							
	1300	to 1330	Lunch							
	1330	to 1400	Climate TA: Bee Bex		HA TA: Terence Ilot	DAP / ICG- EcoC	Noise TA: Niels Kinneging	Litter TA: Lex Oosterbaa		
	1400	to 1430								
	1430	to 1500								
	1500	to 1530	Coffee break							
1530	to 1600		Climate TA: Bee Bex		Impact: Rob Federico	HAZ TA: Marianna				
1600	to 1630									
1630	to 1700	Groups to wrap up and prepare for the next day (use Padlet!)								
1700	to 1730	Groups to wrap up and prepare for the next day (use Padlet!)								
1900	to 2300	Food and drinks at Restaurant Oudean, Oudegracht 99 (on foot from station/hotel area)								
Day 2 (15 June)	830	to 900	Participants arrive and get their entry passess for the building							
	900	to 930	HA TA: Terence Ilot		Climate TA: Bee Bex	Gro / NO: Region I	Impact: Rob Federico			
	930	to 1000								
	1000	to 1030								
	1030	to 1100	Coffee break							
	1100	to 1130	EUT TA / Act 2		DAP / ICG- EcoC			Impact: Rob Federico		
	1130	to 1200								
	1200	to 1230								
	1230	to 1300	Lunch							
	1300	to 1330	with plenary presentation on EMODNET resources by Gert van Hoey (room 13)							
	1330	to 1400	Impact: Rob Federico	EUT TA / Act 2		Climate TA: Bee Bex	DAP / ICG- EcoC			
	1400	to 1430								
	1430	to 1500								
	1500	to 1530	Coffee break							
1530	to 1600		Impact: Rob Federico	EUT TA / Act 2		Climate TA: Bee Bex	DAP / ICG- EcoC			
1600	to 1630									
1630	to 1700	Groups to wrap up and prepare for the next day (use Padlet!)								
1700	to 1730	Groups to wrap up and prepare for the next day (use Padlet!)								
1900	to 2300	Food and drinks at LE:EN (Heuveloord 140, bus 6 to Galgenwaard, stop at Vaartsche Rijn)								
Day 3 (16 June)	830	to 900	Participants arrive and get their entry passess for the building							
	900	to 930		DAP / ICG- EcoC	Impact: Rob Federico	HA TA: Terence Ilot		Climate TA: Bee Bex		
	930	to 1000								
	1000	to 1030								
	1030	to 1100	Coffee break							
	1100	to 1130	DAP / ICG- EcoC		Gro / NO: Region I		HA TA: Terence Ilot			
	1130	to 1200								
	1200	to 1230								
	1230	to 1300	Lunch							
	1300	to 1330	BiTA meeting during lunch: stocktaking and strategy until september meeting							
	1330	to 1400						HA TA: Terence Ilot		
	1400	to 1430								
	1430	to 1500								
	1500	to 1530	Coffee break							
1530	to 1600	Plenary wrap-up. Did we achieve our aims, what is still left to do? (use Padlet!)								
1600	to 1630	Plenary wrap-up. Did we achieve our aims, what is still left to do? (use Padlet!)								
1630	to 1700	Groups to wrap up internally, make provisions for next steps, pack up stuff (use Padlet!)								
1700	to 1730	Groups to wrap up internally, make provisions for next steps, pack up stuff (use Padlet!)								
HA: Human Activities			HAZ: Hazardous substances			Green blocks are in the				
TA: Thematic Assessment			EUT: Eutrophication			video conferencing room				
NO: Norway			DAP: Drivers, Activities & Pressures							

Figure 1. Workshop programme

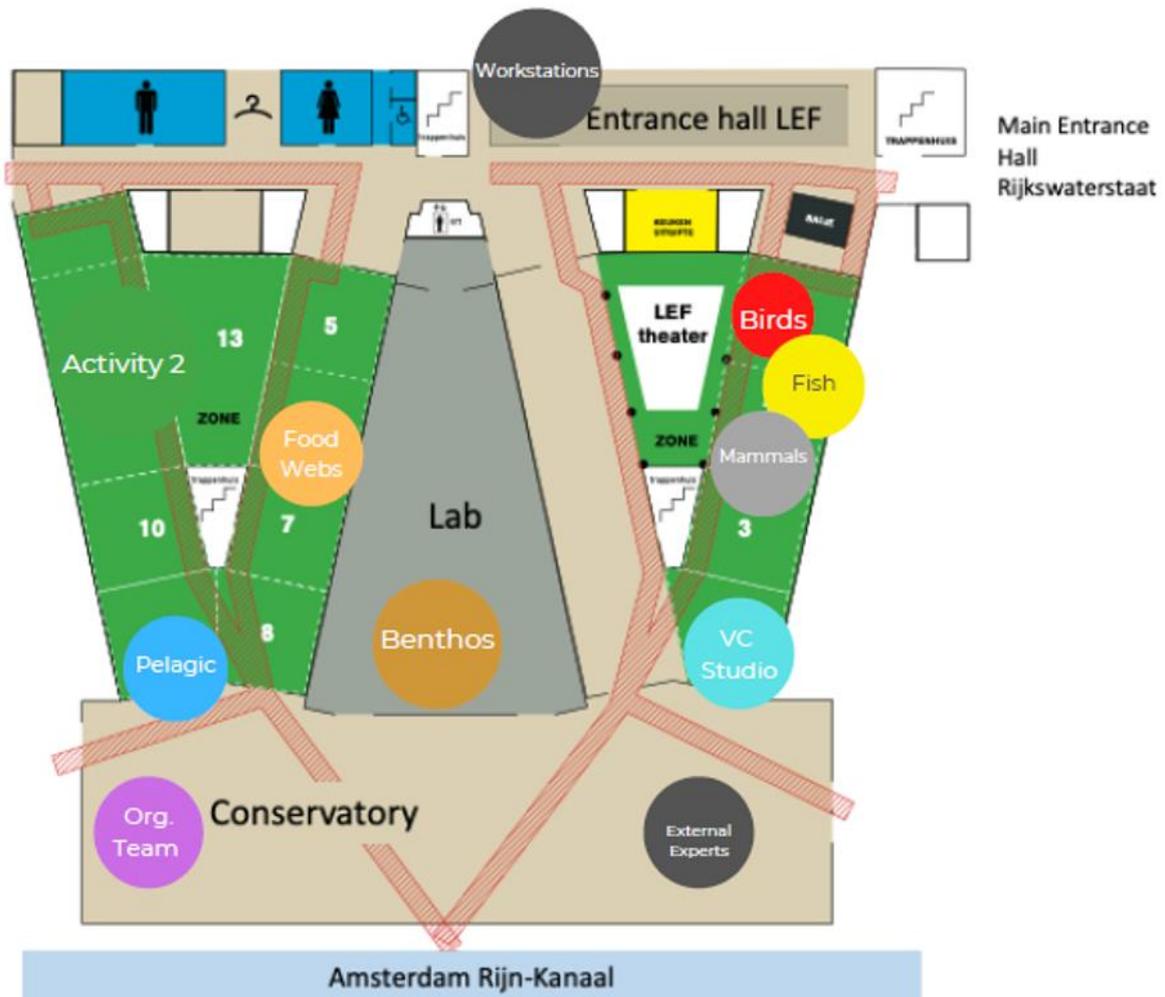


Figure 2. Floor plan of the LEF Future Centre (~70 x 70 m), customized for this workshop.

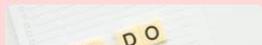
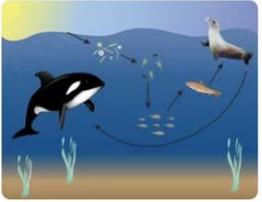
Pelagic Habitats	Marine Birds	Benthic Habitats	Marine Mammals
<p>josschilder 3mo</p>  <p>Add comment</p> <p>Anonymous 3mo</p> <p>Things to prioritise with our time between now and November:</p> <ul style="list-style-type: none"> Anonymous 3mo: New confidence method based on eutrophication method Anonymous 3mo: Add status colours to indicator assessments Anonymous 3mo: Write state chapter of pelagic TA Anonymous 3mo: Do we update PH2 assessment with drivers work? Anonymous 3mo: Write CC chapter of pelagic TA <p>Add comment</p>	<p>josschilder 3mo</p>  <p>Add comment</p> <p>Anonymous 3mo</p> <p>still to do!</p> <p>Anonymous 3mo: Highlights for main areas still to do Drivers and Activities - add any bird-specific references into standard text supplied Pressure chapter Summary table - get clarity from Julien (via Daniell) is we can/should break Pressures down into individual pressures (as done for Activities). Pressures chapter summary - we need to figure out a way to identify trend (compare QSR outputs 2010 with 2023?). Bow-tie: the weighting exercise (Sept EcoC w/s) - outcomes will provide an independent check of the approach taken by birds TA to weight pressures. If there are big differences, we'll need to decide which to believe! Bow-tie - add a bird-specific "discussion-type narrative" about the interpretation, strengths and limitations. Impact of ecosystem services decide</p> <p>Add comment</p>	<p>Anonymous 3mo</p> <p>GONG (Benthic) GANG</p>  <p>Add comment</p> <p>hallmarinda 3mo :-)</p> <p>Add comment</p> <p>josschilder 3mo</p>  <p>Add comment</p>	<p>Anita Gilles 3mo</p> <p>Go Bananas gang</p>  <p>Add comment</p> <p>hallmarinda 3mo Hahaha</p> <p>Add comment</p> <p>josschilder 3mo</p>  <p>Add comment</p> <p>josschilder 3mo</p> 
Fish	Activity 2	Food Webs	
<p>josschilder 3mo</p>  <p>Add comment</p> <p>josschilder 3mo</p>  <p>Add comment</p> <p>josschilder 3mo</p> <p>To discuss and decide list</p> 	<p>josschilder 3mo</p>  <p>Add comment</p> <p>josschilder 3mo</p>  <p>Add comment</p> <p>Anonymous 3mo: Anouk to investigate suitability of COMP4 areas for pelagic. Focus on what explains spatial variability.</p> <p>Anonymous 3mo: Birgit to support finalisation of COMP4 area grouping with eutrophication colleagues at ICG-EUT Meeting in Málaga next week to ensure harmonised categories for pelagic and eutrophication</p>	<p>josschilder 3mo</p>  <p>Add comment</p> <p>josschilder 3mo</p>  <p>Add comment</p> <p>Anonymous 3mo: develop narrative content for the state chapter. based summary tables (delete old tables)</p> <p>Anonymous 3mo: check the bullets on the poster</p> <p>Anonymous 3mo: contact indicator leads and group leads who are not here to check drafting is absent and proceed</p>	

Figure 3. Screenshot of the Padlet used during the workshop.

Interaction inspiration / checklist

The below lists are to inspire and kickstart discussions, if needed, but are by no means comprehensive

D A P (ICG-EcoC)

(Drivers, Activities & Pressures)

- Is the list of D's A's & P's complete in the respective sections? If not, complete it.
- Is the text in the D A P sections that is presented in addition to the (links to) the standard texts sufficient and appropriate? If not, draft further text.

Cumulative effects (ICG-EcoC)

- Do the connections in the bow tie make sense? What links in the bow tie are the strongest / most relevant (weighting)?

I (ICG-ESA)

(Impact on ecosystem services)

- Check and as appropriate copy/paste the schematic and the text for your thematic assessment from the working document on ecosystem services.
- What kind of additional narrative can we come up with based on the results in the State chapter to explain how the ecosystem service is impacted
- Is it feasible to back some of the above narrative up with numbers from literature?

Activity & Pressure TA's

(Human activity, Noise, Eutrophication *et cetera*)

- Are there elements in the pressure TA that need to be explicitly mentioned or addressed in your biodiversity TA?
- Same as above, but vice versa (for pressure TA's that have not been finalized yet, ie. Eutrophication and Hazardous substances)
- Is the messaging in the biodiversity and pressure TA consistent and coherent? (consider style, e.g. level of urgency, as well as the content of the message, e.g. trends in same direction)

Climate Change (CCEG)

- Can you generate input on your ecosystem component based on the underlying indicator and other assessments to evaluate the table on climate change from the QSR 2010?
- At a minimum, include a bullet point list of (general, not e.g. species-specific) the main impacts of climate change effects you expect to occur on your ecosystem component.
- Add an ocean acidification sub-heading, and check the OA other assessment for content.
- Positioning the above information in the biodiversity TA Climate sections and the Climate Change Thematic Assessment

All

- Other...?
- Should we make provisions to fix what we found today at a later stage?
- We have a parking lot at our Padlet site: what elements were found relevant, can not be picked up just now, but should be picked up in the future?

Please do remember the following resources

(most of this can be found on the QSR Sharepoint)

- The QSR guidance
- The writing style guidance
- The Thematic Assessment guidance
- All the non-COBAM OSPARians present here in Utrecht (use them!)
- The lessons learned document from the review of other TA's by ICG-QSR
- The DAPI list of narratives

If you don't have access to the Sharepoint, mail Julien.favier@ospar.org

Figure 4. Inspiration / talking points poster that was on display in all the meeting and working zones.



QSR 2023 further writing guidance: knowledge gaps sections

*OSPAR Science Agenda (OSA) table on QSR Sharepoint: folder QSR 2023
Resources\OSPAR Science Agenda resources\OSPAR Science Agenda_part ii.xlsx*

Indicator assessments

- Link knowledge gaps identified in the assessment with knowledge gaps listed in the OSPAR Science Agenda (OSA) table, where possible.
- Knowledge gaps which are not listed in the OSA table should be highlighted to ease the update of the OSA table that will follow the QSR process.

Thematic assessments

- If there is a particular knowledge gap to be described in the body of the text, use the words 'knowledge gap' and link it to the OSA table where possible.

All assessments

- Modify/update the knowledge gaps and/or insert new rows with additional knowledge gaps and related metadata.
- Use columns G – L to insert/update the metadata such as policy deadline, relevant area, severity of the knowledge gap etc. These metadata would inform the development of research projects and priority setting.

Rows: (common) indicators and thematic assessments.

Columns to update or fill in:

- A. Name of indicator/thematic assessment
- B. Short description of identified gaps
- C. *Not relevant*
- D. MSFD Descriptor
- E. DPSIR
- F. OSPAR Committee

Columns to update or fill in, using drop down menus (see tab 'criteria' for explanation):

- G. Policy deadline
- H. (Sub)Regional
- I. Severity/impact
- J. Likelihood of success
- K. Decrease in uncertainty
- L. Approximate cost
- M. Comment – free format
- N. Indicator priority (most urgent knowledge gap per indicator)
- O. Strategic priority (see corresponding tab)

Figure 5. Poster on display in all meeting and working zones with a view to the future: the OSPAR science needs agenda and knowledge gaps.

3 Reflections by (lead) participants

Even though for practical reasons there are no detailed minutes for the 36 sub-meetings of the workshop, key participants representing all participating groups were asked to deliver a brief pitch at the end of day 3 to wrap up the meeting (see section 3.6), and later also to write a brief written reflection (Section 3.1 to 3.5).

3.1 The organisers

From a technical point of view, the workshop went very well. The venue was set up by the LEF Future Centre as requested; WiFi and videoconferencing units were operational; laptops and projectors in all rooms were functioning; lunch, snacks and drinks were provided timely and according to dietary wishes of the participants; and the programme the coordinating team had designed with moderator Marinda Hall ran smoothly. This allowed for a workshop in a very positive atmosphere where the participants could focus fully on the tasks ahead.

The main progress and outputs are reflected in the (at time of writing still in production) 7 biodiversity ecosystem component thematic assessments. Experts working on the DAP (drivers, activities, pressures), I (impacts) and Climate sections of the biodiversity thematic assessments were able to share and explain their contributions and query the biodiversity experts: e.g. are there elements missing, are links and cause-effect relations appropriately represented (direction, magnitude, *et cetera*)? Follow-up arrangements were made to deliver supplemental information or review elements. Similarly, the workshop's success can be seen in an increased coherence between biodiversity and non-biodiversity thematic assessments, as the lead authors of the thematic assessments on human activities, marine litter, underwater noise, hazardous substances and eutrophication shared their progress and learned about the messaging in the biodiversity thematic assessments. A representative from Norway interacted with some of the expert groups to enable better incorporation of information from the arctic region and members of the OSPAR secretariat supporting biodiversity work and the QSR process in general had an opportunity to visit all the groups to answer questions and offer guidance and steer during a crucial stage of the QSR's drafting process.

Another important but intangible result of the workshop is that it brought the experts, not just across biodiversity and ICG-COBAM, but across a much wider OSPAR network together. These experts are expected to collaborate on the integrated, holistic thematic assessments, but stemming from different OSPAR silo's (EIHA, HASEC, BDC, CoG) many of these experts had never met. Getting acquainted with one another and exchanging on a personal level has lowered barriers and opened communication channels that benefit QSR2023, and through its products EU Member State MSFD reporting, and perhaps also future work.

3.2 Biodiversity groups

3.2.1 *Marine birds*

The group working on birds in NEA PANACEA Activity 4 was represented by Matt Parsons and Volker Dierschke, assisted by the invited expert Fredrik Haas. This team critically reviewed, discussed, and revised the sections of the Marine Birds Thematic Assessment that had already been prepared. For this, the contact with colleagues from other disciplines in OSPAR was very helpful. Some chapters of the report were significantly advanced with the help of the contributors to those chapters. This was particularly true of the chapter on the impact of climate change on marine birds, under the guidance of Bee Berx. There were a number of misconceptions on the topic of ecosystem services. These could be clarified in the discussion with Federico Cornacchia and Rob van der Veeren. Items related to the interaction between marine litter and marine birds were brought forward with the help of Lex Oosterbaan, coordinating author of the Marine Litter Thematic Assessment. The already long existing cooperation with Emily Corcoran regarding the Response chapter was continued. Problems faced in the chapter about human activities and the deriving pressures could be solved in conversation with Daniel Wood. Not least, weightings in the Sankey plot could be evaluated and complemented in preparation of the weightings workshop to be held the following September. All together, the UltraCOBAM workshop was a welcome interdisciplinary event that had great benefits for the technical elaboration of the Marine Birds Thematic Assessment.

3.2.2 *Marine mammals*

Gro van der Meer/Region I: we clarified the status of the Norwegian grey and harbour seal data for M3/M5 indicators. These are the only data submitted; unfortunately, we did not receive any data on cetaceans for M4. ACTION Gro will write a high-level summary for seals and cetaceans (one paragraph) in Region I. No maps, tables or figures – only narrative. This will be included in the State chapter of the TA. The narrative will be based on new 2022 papers mostly on baleen whales, but also noted WG IBAR, survey reports etc. for seals in Norway.

Niels Kinneging/Noise TA: See Underwater Noise (3.4.1)

Federico Cornacchia & Rob van der Veeren / Impact: Federico explained his approach of choosing 17 Marine Ecosystem Services from Common International Classification of Ecosystem Services (CICES) to be used in the TAs. For consistency, there is intention for one combined key message /narrative covering all indicators/species in our TA. We discussed that eventually up to two could be suitable to divide pinnipeds and cetaceans. ACTION to update and review the two key messages (Cetaceans (M4 and M6) and Seals (M3, M5 and M6)) that are currently being used as these still relate to IA2017. We decided that for MM there should be no weighting associated with the arrows (due to knowledge gap), but (ACTION) we could review colours (positive, neutral, negative) of arrows.

HAZ TA /Secretariat: OMMEG (in close work with HASEC) prepared a pilot indicator on PCB. Lena, Marianna and Anita had a meeting with Alejandro (OSPAR secretary for HASEC) to discuss the integration of the PCB indicator between the marine mammals (MM) and hazardous substances (HAZ) thematic assessment. Decision on a short narrative that will be added into the state chapter of HAZ, while hyperlinks to the indicator will be added into the activities and pressures chapters of MM (ACTION Marianna). ACTION The narrative for HAZ state chapter needs to be ready week 20 June.

Further comments and modifications can be made later on. Final deadline for HASEC indicators and TA 6 September!

Emily Corcoran /Response: R-chapter largely depends on the Activities and Pressures chapter – if elements are removed or re-prioritised here, this will impact the chapter (we need to notify Emily if so). Otherwise, we agreed that R-chapter is in good shape and needs the few remaining comments to be resolved (ACTION Emily will take care).

Daniel Wood / DAP / ICG- EcoC: Chapter is in good shape; we clarified some definitions and that a few activities are missing (ACTION Daniel & Simone to add missing ones). Activities: We reviewed and confirmed the current human activity list in the TA and clarified Qs on whether human activities related to PCB's should be added. ACTION We will add 1-2 sentences as a small narrative in the 'Other Substances' paragraph. Pressures: Need to reorder/weight the current list of pressures in the TA into an order appropriate for marine mammals, i.e. Bycatch, Noise etc. high on the list (but wait until weighting is done following the ICG WS in Sep)

Barbara Berx/ Climate Change section: We identified a resource gap for this work; ACTION Roma Banga to identify if resource is available within JNCC to draft this section. ACTION Marianna will feed in additional literature/text on the effect of climate change on pollution in Region I -V (mostly I though). ACTION Send a first draft including main key messages by 1 August at the latest so the CC group can present it in September in line with their deadline to deliver their TA at CoG.

Points to consider in the climate change section:

- Does not need to be more than a page – the Noise TA CC section is high level and short. see this as an example.
- Include bullet points, or annotated outline, down for the group to take forward as key messages
- Take inspiration from IPCC report sections on marine mammals, If CP's have carried out CC assessments on mammals in other reports, MCCIP 2020 CC report etc.
- If we have literature/evidence available on the effect of climate change on abundance and distribution with respect to the indicators, include this, however it is acknowledged that this may not be feasible.
- Include what/any response/mitigation measures that have been taken to reduce the impact on MM – nature-based solutions, renewables etc. Also note impacts (increase in wind renewables), however here we can add a hyperlink to the Drivers/Pressure section as this would be covered here anyway.
- UW noise assessment already has some points that we may want to consider.
- Consider and include what/would more data/what evidence is needed to start making advances on some of these questions in the next QSR?
- NEAS 2030 climate change objectives.
- cross-check with TAs with semi-complete Climate Change sections: Underwater Noise, Radioactive Substances, Offshore Industries, Hazardous Substances

Terence Ilot, Lisette Enserink / Human activities TA: We mainly discussed cross-cutting issues and where we should seek more interaction for next QSR. Lisette proposed to check whether observed Regime shift in phytoplankton in the North Sea (best talk to Matt Holland or Arnaud) could somehow be discussed in connection with observed north-south shift of harbour porpoises around 2005. Knowledge gap identified – top predator and connection to food web

Lex Oosterbaan/Marine litter TA: Email exchange with Lex & marine litter team to make sure we look for linkages. ACTION check State section that describes harm to biota; and Also executive summary and perhaps the summary table on the Common Indicators (start of Pressure section)

Take home messages for next QSR and follow-up in OSPAR work:

1. The potential of new ecological models to quantitatively assess the effect of human activities on marine mammals' health in an integrated way?
2. What's the effective impact of impulse/continuous sources of noise, shipping, tourism and so on on marine mammals? We don't know what the ensemble of all these pressures can lead to?
3. Climate change key messages to link with OSPAR climate objectives

3.2.3 *Fish*

NEA PANACEA's UltraCOBAM meeting in Utrecht, was of considerable benefit to the OSPAR Fish EG. It provided the Fish EG with a forum to develop and integrate its activities in the wider context of the thematic assessments for the OSPAR QSR. The focus was on climate change, ecosystem services, cumulative effects and pressures. The exercise allowed for the fish EG to input to the climate change thematic assessment, with a literature review being provided by the Fish EG. As regards cumulative effects, UltraCOBAM provided the basis for the Fish EG to understand and input to the process, which will culminate with a weightings workshop on the 13th and 14th September. Interaction with OSPAR colleagues working on Ecosystem Goods and Services highlighted both commonalities and differences of opinion on how to proceed. However, given the time constraints a pragmatic approach was taken, by which the Fish EG would follow the approach taken by the consulting experts. Overall UltraCOBAM was a significant milestone in the process by which the Fish EG will deliver its requirements for the QSR.

3.2.4 *Food webs*

The group of Food Webs was represented by Andrea Belgrano (SLU, Sweden) and Marian Torres (CN-IEO, CSIC, Spain). During the meeting we first contacted the indicator leads and group who were not present to check drafting in the sharepoint and respond to comments. Thus, the revision of the current status of the TA and identification the knowledge gaps were first addressed. Narrative content for the state chapter based on updated summary tables was developed. Additionally, integration method development as a OSA knowledge gap at the end of the State chapter was described. During the meeting the FW group had a chance to discuss with Climate Change, Eutrophication, Ecosystem Services, DAP and other experts in order to clarify their linkages with the food web TA.

Future work on climate change as OSPAR Science Need Agenda content, e.g. in the next 5 years run FW4 and FW7 indicators against different IPCC scenarios, was identified as knowledge gap. Better coordination and communication within the FW group is needed and more detailed information on the FW9 indicator development was also detected. Potential discussions on how the current FW indicators contributing to the QSR will be linked in the TA to the DAP, CC and ES were made. Finally, completing the suggested tables in the state section mapping the FW indicators to the MSFD D4 criteria was decided.

3.2.5 *Pelagic habitats*

The pelagic habitats expert group met with Terence Ilott to discuss which activities in the Human Activities Thematic Assessment were relevant to pelagic habitats and decided to exclude some activities which were initially being considered, since they are unlikely to influence the state of pelagic habitats. Within the pelagic habitats group we advanced discussion on a set of tables to summarise indicator results within pelagic habitat types for each OSPAR Region. We agreed on the importance of incorporating spatiotemporal confidence in data coverage, assessing spatial representativeness of time-series available and considering links to anthropogenic and environmental pressures.

The group spoke with Bee Berx (representing OSPAR's Climate Change Expert Group, CCEG) about relevant content from the pelagic habitats indicator assessments that needed to be provided for the climate change thematic assessment and agreed to provide this content by 1 August. The interaction with Anouk Blauw (representing NEA PANACEA's Activity 2, but also involved in OSPAR's ICG-EMO on eutrophication modeling and the EU-funded project JMP-EUNOSAT) focused on the satisfactory performance of the COMP4 assessment areas for delineating distinct trends in plankton time-series and highlighted the need for greater alignment in the messaging for the pelagic and eutrophication thematic assessments, particularly the for PH2 indicator (changes in phytoplankton biomass and zooplankton abundance). With Federico Cornacchia and Rob van der Veeren the group worked collectively to decide on values to represent the magnitude and nature of the impact of ecosystem state changes on each relevant ecosystem service. Finally, meeting with Daniel Wood (ICG-EcoC, DAPSIR framework) helped structure discussion around some Activities to be excluded and additional activities to be included in the pelagic habitats thematic assessment.

3.2.6 *Benthic habitats*

All OBHEG group/thematic assessment and indicator leads could attend physically these 3 days, with also physical attending (or online for 1 expert) of several other active members, ensuring a good geographic and thematic representation of the benthic expertise in OSPAR maritime area. Technical discussions happened on each indicator assessment and assessment units, notably the first day and as a background context, but the main goal of this workshop was to progress the thematic assessment.

This UltraCOBAM workshop enabled OBHEG, collectively, to:

- Review and contribute, by sharing experts' responsibilities by paragraphs (activity and pressure types), to the Drivers-Activities-Pressures chapter. An excel file was also presented and shared for a future contribution by experts to prepare the future dedicated workshop (London, 13-14/09/2022; See internal OBHEG report), which progressed the quantification of the main effects of pressures on benthic habitats as an input for the bow-tie approach and diagrams.
- Review and contribute to the Impact on Ecosystem Services chapter. The draft schematic was discussed and almost finalized for benthic habitats.
- Review and contribute to the Climate change chapter. An innovative table summarizing experts and literature knowledge, was progressed and almost finalized. This table informs on the supposed range of effects of climate change-related pressure types on broad habitat types.
- Progress and draft (for illustration only, as final results not yet available) the tables and associated colour keys which will be the main input for the (integrated) State Chapter. These tables will summarize the results of all assessed indicators per broad habitat type, for each assessment unit where these indicators are assessed (as a common indicator or pilot assessment).

3.3 DAP, I, Climate

3.3.1 Drivers, Activities, Pressures

During the six sessions with the biodiversity expert groups agreement was reached on which combinations of Activities and Pressures were most likely to be relevant to each of the ecosystem components. This was an important step as it allowed focusing efforts, reducing the workload of what is a very large task. Secondly, the groups worked through the weightings methodology for the Activity/Pressures combinations (adapted from the EU Framework 7 funded ODEMM project). Many colleagues were pleased to see the ODEMM methodology being used as they were involved in the original project. Weighting the Activity/Pressure combinations is a key part of the thematic assessments as it will help to understand which are the most important Activity/Pressure combinations with respect to changes in ecosystem state. The discussions around how the weightings would be applied provided an important common understanding. It was agreed that determining the exposure of receptors to the various Pressures should be relatively straight forward. However, in many cases determining discrete state changes from these pressures and resilience to them will be challenging. For some thematic assessments this is because of the huge variability in sensitivity and resilience across species and habitats (e.g. birds and benthos), across an area the size of the North East Atlantic. The work on weighting the Activity/Pressures combinations will be continued via a questionnaire and at a workshop on the 13th and 14th September 2022.

3.3.2 Impact (on ecosystem services)

During the UltraCOBAM meeting Rob van der Veeren (representing ICG-ESA) and Federico Cornacchia (contracted by the government of the Netherlands to support the biodiversity experts on the impacts on ecosystem services subsection of the biodiversity thematic assessments) had sessions with all 6 present biodiversity expert groups on the 'impacts on ecosystem services'.

Each of those sessions had the same set-up: First, Federico explained what ecosystem services are, and presented the method he used to link changes in the status of the marine environment (as described in the 2017 OSPAR Intermediate Assessment) to impacts on ecosystem services. Then, the experts were asked to examine whether, based on the most recent analyses, there is a reason to adjust the overall message regarding the changes in the marine environment for their ecosystem component (and if so, how). The next question was whether the experts agreed with draft representation of the ecosystem services that are affected by the changes in the marine environment in question, or that they thought that certain ecosystem services should be added (in which case they should ideally also provide literature references), or whether they thought that certain ecosystem services were not relevant and should therefore be removed from the representation. The last step was to come up with an expert judgement of the extent to which the impacts on the ecosystem services in question are large or not so large, and to indicate whether the direction of the effect was positive or negative.

After the presentation and discussions in these sessions, the expert groups continued working based on what has been discussed to see whether they had enough information to move forward with the 'impacts' sections in their thematic assessment. On day 3, Federico and Rob made a final tour of the expert groups groups to answer any remaining questions. A similar discussion took place with the lead of climate change thematic assessment, to see what could be included about impacts in that assessment (this is not a biodiversity assessment, but UltraCOBAM was a good opportunity to discuss Climate change impacts on ecosystem services as well).

After the meeting, the expert groups had until the end of July to provide comments and suggestions to Federico on the draft texts on the impacts sections in their thematic assessments. Federico has adjusted the sections accordingly and with that, the impact sections in the various thematic assessments were finalized by the end of August.

3.3.3 Climate change

NEA-PANACEA's UltraCOBAM meeting was a great opportunity for the Climate Change Expert Group (CCEG) in OSPAR, represented by Bee Berx, to engage with many of the biodiversity groups. As a relatively new expert group, CCEG is still building its network and having the CCEG co-lead attending the meeting in Utrecht was a great opportunity to do build this network both during the formal part of the agenda, and the more informal parts (coffee, lunch and dinner). Thanks to the excellent planning in advance, there was a good amount of time scheduled into each group's schedule to make the engagement possible.

Previous to the meeting, many of the groups had not yet managed to spend much time in the "climate change box" of the thematic assessment template, and the interactions were often a first step in this discussion. Each group did have a somewhat individual approach to this, and on

reflection, a more holistic approach to climate change assessment could be developed for future cycles of the Quality Status Report (something for further discussion and consideration after this cycle by the wider OSPAR structures).

During the meeting, with all groups arrangements were made for initial information to the Climate Change thematic assessment, with an agreed deadline of 1 August. All groups managed to deliver this on time (or relatively soon after), and this has been much appreciated by the Climate Change Expert Group.

3.4 Pressures

3.4.1 Underwater noise

Niels Kinneging (representing ICG-Noise and co-lead author of the underwater noise thematic assessment) had a constructive discussion with the marine mammals experts on the relationship and interactions between ICG-Noise and OMMEG. The way ICG-Noise has prepared the three indicator assessments and the thematic assessment was presented to OMMEG, and OMMEG had been able to help ICG-Noise in the preparation of the assessment of impulsive noise with the interpretation of porpoise maps. It was discussed what ICG-Noise needs to assess the risk-of-impact on marine mammals. OMMEG can best advice on which distribution map is best suited for noise impact assessment, how these are made and whether they represent actual distribution or a kind of 'habitat suitability'. The kind of impacts of noise on marine mammals that ICG-Noise considers (permanent threshold shifts, temporal threshold shifts, behavioural effects, masking) were discussed and it was recognized that more knowledge is needed on these effects, like dose-effect-relations (when appropriate). The interaction inspired the co-convenor of ICG-Noise and the OMMEG representatives to keep the conversation going and link up more frequently. The next major task of ICG-Noise (regional action plan on underwater noise) is a good opportunity to follow up on this interaction.

3.4.2 Marine litter

Lex Oosterbaan and Mareike Erfeling (representing ICG-ML and leading the marine litter thematic assessment) were invited to have an interaction with the marine birds experts. The linkages between both thematic assessment were identified and discussed, and the marine litter experts informed the marine birds experts on the various marine litter indicators OSPAR produces (especially the plastics in fulmar stomachs indicator) and invited the marine birds experts to read up on the State section in the marine litter thematic assessment (which describes harm on ecosystems and biota). After the meeting the marine litter experts made some text suggestions in the Response section of the marine birds thematic assessment on the QSR sharepoint. In addition, the marine litter experts reached out to the marine mammal thematic assessment leads to invite them to read up on the marine litter thematic assessment (which had already been approved by OSPAR ICG-ML, EIHA and ICG-QSR at the time of the meeting) because linkages with that thematic assessment were considered likely.

3.4.3 Hazardous substances

In the end it turned out that the person best qualified to represent hazardous substances (where the topic of contaminants in marine mammal blubber was on the agenda) was also attending the workshop as a member of the marine mammal expert group. This meant the topic could be picked up as part of the work flow and the dedicated meeting was removed from the programme.

3.4.4 Human activities

During the interactions of the biodiversity expert groups with the lead author of the human activities thematic assessment (Terence Ilot), the biodiversity experts were made aware of the content and structure of the human activities thematic assessment, specifically on the topic of activities relevant for their ecosystem components which allowed for identification of activities the biodiversity thematic assessment leads had not yet picked up on. The biodiversity thematic assessment leads were further pointed to the messages for OSPAR / conclusions section of the human activities thematic assessment and the various feeder reports underpinning the human activities thematic assessment so they could consider how these might relate to their ecosystem component.

3.5 Other

3.5.1 The Arctic

Gro van der Meeren from Norway was invited to strengthen the representation of knowledge and representation of Arctic waters (OSPAR region I) in some of the biodiversity thematic assessments. Meeting and discussing in planned meetings with the fish, marine mammal and food web expert groups made clear what information was needed in the form of short, verbal presentations of the states, trends and climatic impacts of the topics regarding Region I. Some information on human impact activities was also included when asked for by the expert leads. Further, ad hoc communications with other expert group leads were organized.

The presentations were made based on the expert information that was collected before and during the meeting on request from various experts back in Norway. One half to two pages presentations of the topics for Region I were made or further developed during the workshop, based on published and publicly reported data, all with cited literature added to the text sections. Food webs, benthic habitats, fish, marine mammals and pelagic habitats were supplied with new or extended texts as requested by the thematic assessment leads. Feedback from these leads during the workshop guided the preparations and writing of the material. The national experts will be asked to review the text when full drafts for the QSR 2023 report are available, to ensure that the content has not been flawed due to misinterpretation by the meeting representative, or important information lost in the process.

3.5.2 OSPAR secretariat

From the Secretariat perspective there were several positive contributions that resulted from the UltraCOBAM meeting. By organizing this workshop, NEA PANACEA has made a significant

contribution to the QSR. The workshop meeting was held at a very opportune moment in the process. The timeline to deliver the QSR products is tight, and this meeting acted as an accelerator for progress. The structure of the meeting provided the opportunity for the Secretariat to interact face to face with the different expert groups in a very efficient way that would not have been possible without this meeting, with very positive outcomes in terms of progress and quality of interactions. There were also a number of intangible but important benefits of the meeting. Not least the ability for international expert teams to spend time with each other, informal discussions helping to resolve challenges across teams, building a momentum and positive energy for the work after a long period of having to work remotely from each other due to COVID related restrictions.

3.5.3 *BiTA convenors*

The BiTA convenors note that by the end of UltraCOBAM all the experts had a much clearer understanding of how their work on indicators was going to fit together with everything else into the DAPSIR framework of the thematic assessment. This implies that despite all the guidance that has been issued there was still a lot of uncertainty, which fortunately was addressed at the workshop. This proves the value of bringing people together to discuss, explore, and resolve. Being together allowed a lot of essential dots to be joined.

3.6 **Closing remarks**

During the final workshop session the participants met in plenary to reflect on the workshop. It was noted that:

- The interactions were enlivening and inspiring, that the workshop ran smoothly and that the aims (constructive dialogue between the various assessment silo's) were achieved;
- There had been very productive interactions of the biodiversity experts with the experts working on Drivers, Activities, Pressures, Impact and Climate change. The narratives in these respective chapters were now much better tailored to the specificities of the relevant ecosystem components;
- Much more clarity around the methodology and aims of the bow-tie analysis to represent cumulative pressures, impacts and response was established;
- The interactions with the experts on economical analyses working on the (impacts on) ecosystem services was experienced as an eye-opener and helped the experts with a background in biology wrap their heads around this topic and perspective on the marine environment;
- That the workshop facilitated cross-linkages between the various thematic assessments in the OSPAR QSR (14 in total), both between biodiversity thematic assessments and between biodiversity and non-biodiversity thematic assessments;
- Getting to know other OSPAR experts from all areas of expertise on a personal level was recognized as a great benefit to current and future exchanges and collaboration;

- Within the State chapter of each thematic assessment, good steps forwards were taken in working out how to integrate the various indicators into one integrated assessment: this was not done previously and posed different and unique challenges for each ecosystem component;
- In terms of planning, the workshop enabled the various expert groups to devise the delivery timelines for various deliverables and the interactions allowed for lining up of higher level QSR-related timelines by the secretariat, ICG-COBAM and BiTA representatives.

4 Participant list

In-person attendees		
First name	Last name	Expertise
Cristina	Vina-Herbon	Benthic Habitats Expert Group
José Manuel	Irusta	Benthic Habitats Expert Group
Anna	Lizinska	Benthic Habitats Expert Group
Gert	van Hoey	Benthic Habitats Expert Group
Katherine	Cronin	Benthic Habitats Expert Group
Laurent	Guérin	Benthic Habitats Expert Group
Liam	Matear	Benthic Habitats Expert Group
Paul	Coleman	Benthic Habitats Expert Group
Petra	Schmitt	Benthic Habitats Expert Group
Sander	Wijnhoven	Benthic Habitats Expert Group
Michael	McLeod	BiTA and ICG-POSH convenor
Bee	Berx	Climate change Expert Group
Federico	Cornacchia	Economical and Social Analyses (Impact section)
Rob	van der Veeren	Economical and Social Analyses (Impact section)
Che	Spraos Romain	Economical and Social Analyses (Impact section)
Gerjan	Piet	Fish Expert Group
Maurice	Clarke	Fish Expert Group
Dafne	Eerkes-Medrano	Fish Expert Group
Marian	Torres	Food Webs Expert Group
Andrea	Belgrano	Food Webs Expert Group
Richard	Emmerson	ICG-COBAM convenor
Daniel	Wood	ICG-EcoC (D A P sections)
Fredrik	Haas	Marine Birds Expert Group
Matt	Parsons	Marine Birds Expert Group
Volker	Dierschke	Marine Birds Expert Group
Marianna	Pinzone	Marine Mammal Expert Group
Anita	Gilles	Marine Mammal Expert Group
Matthieu	Authier	Marine Mammal Expert Group
Roma	Banga	Marine Mammal Expert Group
Marinda	Hall	Moderator
Anouk	Blauw	NEA PANACEA Activity 2: Eutrophication & physical conditions
Lisette	Enserink	NEA PANACEA Activity 2: Eutrophication & physical conditions
Birgit	Heyden	NEA PANACEA Activity 2: Eutrophication & physical conditions
Hannah	Schambil	NEA PANACEA Activity 2: Eutrophication & physical conditions
Thomas	Raabe	NEA PANACEA Activity 2: Eutrophication & physical conditions
Evert Jan	van den Berg	NEA PANACEA Activity 5: Coordination
Lyke	Bosma	NEA PANACEA Activity 5: Coordination
Mees	van der Donk	NEA PANACEA Activity 5: Coordination
Jos	Schilder	NEA PANACEA Activity 5: Coordination
Eva	Varkevisser	NEA PANACEA Activity 5: Coordination
Emily	Corcoran	OSPAR Secretariat
Julien	Favier	OSPAR Secretariat
Lena	Avellan	OSPAR Secretariat
Luis Felipe	Artigas	Pelagic Habitats Expert Group
Abigail	McQuatters-Gollop	Pelagic Habitats Expert Group
Arnaud	Louchart	Pelagic Habitats Expert Group
Isabelle	Rombouts	Pelagic Habitats Expert Group
Matthew	Holland	Pelagic Habitats Expert Group

Gro I.	van der Meeren	Region I (Arctic) assessments
Lex	Oosterbaan	Marine Litter Thematic Assessment
Mareike	Erfeling	Marine Litter Thematic Assessment
Niels	Kinneging	Noise Thematic Assessment

Virtual attendees		
First name	Last name	Expertise
Hermann	Lenhart	NEA PANACEA Activity 2: Eutrophication & physical conditions
Lisette	Enserink	NEA PANACEA Activity 2: Eutrophication & physical conditions
Wera	Leujak	ICG-EUT
Phillip	Axe	ICG-EUT
Michelle	Devlin	ICG-EUT
Terence	Ilot	Human Activities Thematic Assessment
Sharon	Boyle	UK policy maker (listening in)
Claudia	Morys	Climate Change Expert Group