



INTERNATIONAL ALLIANCE TO
COMBAT OCEAN ACIDIFICATION



OSPAR
COMMISSION



Exploring Marine Management and Policy Response to Ocean Acidification
Held on the margins of European Maritime Day 2023

24 May 2023
7:30am-9:30am
Brest, France

The Club House at [Marina du Chateau](#) (Quai Eric Tabarly, 29200)

[European Maritime Day](#) 2023 (EMD) took place in Brest, France between 24-25 May. The EMD was organised by the European Commission, the City of Brest, the Region of Brittany, the department of Finistère and the General Secretariat for the Sea. It explored the current state of play on a broad range of issues concerning the blue economy and the marine environment and discussed ways of moving forward.

To support these themes and advance the integration of climate change information across key European marine management frameworks, the [International Alliance to Combat Ocean Acidification](#) (OA Alliance), [OSPAR Convention](#) Intersessional Correspondence Group on OA (ICG-OA), and [NE Atlantic Hub of the Global Ocean Acidification Observing Network](#) (GOA-ON) convened a satellite meeting, “*Exploring Marine Management and Policy Response to Ocean Acidification.*”

The meeting brought together policy and decision-makers across Europe to discuss:

1. OA trends, biological impacts and threats to keystone fisheries and aquaculture within the Arctic, North Atlantic and Mediterranean.
2. Reporting and [OA recommendations by OSPAR's Intersessional Correspondence Group on OA \(ICG-OA\)](#) in OSPAR’s Quality Status Report 2023 as well as national response strategies.
3. EU and national ocean and marine policy frameworks (including the Marine Strategy Framework Directive, Water Framework Directive and Marine Spatial Planning efforts) that can be leveraged to characterize, address, and minimize ocean and coastal acidification.

This meeting summary describes key points made across the presentations and the participant discussion/ feedback that followed.

Agenda, Presentations and Supporting Materials can be Found at:
<https://www.oaalliance.org/webinars/5so5pqqfxikf2m1jrkkky069j3tj2eq>

PRESENTATIONS

The importance of understanding OA trends and impacts in NE Atlantic and Mediterranean,
Dr. Helen Findlay, Global Ocean Acidification Observing Network NE Atlantic Hub Coordinator,
Plymouth Marine Laboratory

- It is important to monitor OA regionally, nationally and in some cases locally. Without local monitoring we cannot implement action to:
 - Reduce emissions, switch to renewables, promote blue carbon management, assess marine CDR technology.
 - Invest in adaptive planning, habitat protection and restoration.
 - Manage co-stressors (e.g. land-run off, pollution, overfishing, agricultural inputs, eutrophication).
 - Invest in science and capacity building.
- Global average rates of change do not capture the nuances of local change. For example, global average pH decline has been 0.0017 y^{-1} , while local coastal time-series suggests rates vary between -0.0195 y^{-1} to -0.0021 y^{-1} (up to an order of magnitude faster).
- Modelling and coupling chemical and biological information can help:
 - Examine impacts to keystone species.
 - Understand ecosystem-wide impacts.
 - Target coastal pollution pressures.
- The Global Ocean Acidification Observing Network (GOA-ON) consists of >1000 scientists from 105 countries and aims to:
 - Document the status and progress of OA.
 - Understand the impacts of OA on marine ecosystems and societies.
 - Support forecasts of OA conditions.
- GOA-ON has regional hubs including a NE Atlantic Hub and Mediterranean Hub. These hubs work regionally to understand and monitor OA with aim of improving evidence for policy and management. However, uptake and application from policy and decision makers is still slow.

OSPAR Convention ICG-OA Mandate, OA Assessment Findings, Recommendations and Opportunities, Dr. Jos Schilder, Rijkswaterstaat, the Netherlands

- Under the ICG-OA mandate, the OSPAR Convention released an OA Assessment in March 2023.
- The report found that OA is observed in all OSPAR Maritime regions, but that the rate of change varies between regions and locally.
- Model projections revealed that OA is expected to continue under high and medium emissions scenarios (and even accelerate under high emission scenarios).
- OA puts marine species under stress, in an environment presenting many other stress factors (multi-stressor). Mitigation and adaptation measures are required to alleviate these pressures.
- Two species case studies were highlighted due to the negative impacts they experience and will experience. These include risks posed to cold water corals (important habitat to many species, including fish) and Atlantic cod.
- The report includes monitoring and policy recommendations; key takeaways include:
 - Understanding of trends, variability, drivers, and ecological impact of OA needs to improve. This requires more harmonized and tailored monitoring and data integration, further integration of observations and model products, and an ongoing multistrand effort to predict and respond to impacts.
 - Additionally, climate change mitigation and adaptation responses are in many cases also effective against OA.
 - Management measures adopted must consider the cumulative multi-stressor environment and the sensitivity of the specific habitat/ ecosystem component to changing conditions including OA. Better understanding bio impacts should inform response measure.
 - Effectiveness of approaches likely to hinge on local conditions and factors—therefore, local monitoring is critical.
 - Operational objectives that aim to protect and restore ecosystems can play an important role in enhancing ecosystem resilience to climate change and OA.
 - These include:
 - Reducing CO₂ emissions.
 - Reducing non-climate pressures.
 - Controlling excessive nutrients that exacerbate coastal acidification.
 - Coherent network of MPAs for habitats at risk.
 - Proactive and reactive management responses.

Leveraging Domestic Management Schemes and Frameworks, Jessie Turner, Director, International Alliance to Combat Ocean Acidification

- The OA Alliance was created in 2016 to support governments in better understanding and responding to the impacts of ocean acidification and climate-ocean change along their coastlines.
- To accomplish this, we ask governments to create “OA Action Plans” which include efforts to: (1) reduce carbon emissions; (2) advance local science and research; (3) reduce local land-based pollutions that exacerbate ocean and coastal acidification; (4) explore adaptation and resilience strategies that support keystone species and communities; (5) expand education and awareness; and (6) sustain international support for OA work.
- Across Europe and the Mediterranean, we know we have existing conventions and shared directives with relevant responsibilities and mandates; so how might we begin mapping these to better understand how they might be leveraged or further directed to more directly support OA activities:
- Relevant conventions:
 - OSPAR Convention and Intersessional Correspondence Group on Ocean Acidification (ICG-OA) OA Assessment
 - Helsinki Convention (HELCOM)
 - Barcelona Convention
 - Arctic Council
 - Working groups including AMAP; CAAF; PAME
 - Bucharest Convention
- Relevant directives:
 - Marine Strategy Framework Directive
 - Marine Spatial Planning Directive
 - Water Framework Directive
 - Nitrates Directive
 - Habitats Directive
 - Birds Directive
- The OA Alliance has created raw materials that present relevant Conventions and Directives; illuminating where they might be applied, leveraged or expanded to support: OA monitoring, reporting; shared or coordinated research; mitigation of CO₂; remediation including reduction of pollutions like wastewater and nitrogen; and deployment of adaptation and resilience building efforts.
- Specially, OA information can be used for
 - Increasing monitoring, modelling and determining shared research priorities (biological/ indicators).
 - Make the case for increased pollution controls (nutrients/ eutrophication).

- Help inform decisions about conservation (MPA).
- Help inform decisions about sustainable marine use/ activities (MSP)1.
- During today's discussion, we are going to speak specifically about the marine strategy framework directive and the marine spatial planning directive-- both of which utilize definitions of Good Environment Status (including several indicators) and take an ecosystem-based approach to marine and costal management.
- A paper published in 2020 (Galdies et al.) reviewed 90 legislative documents from 17 countries in the European Economic Area and UK. Galdies looked at relevant descriptors for examining GES in the context of OA including:
 - Descriptor 1- Biodiversity is maintained.
 - Descriptor 5- Eutrophication is minimized.
 - Descriptor 7- Permanent alteration of hydrographical conditions does not affect ecosystem functions.
 - Descriptor 11- Introduction of energy pollution.

FOCUSED INTERVENTIONS AND DISCUSSION

Interventions from European Commission (DG Environment and DG MARE): How is the European Commission approaching updates to the Marine Strategic Framework Directive and the Marine Spatial Planning Directive in the context of climate change?

- The Marine Strategy Framework Directive (MSFD) sets out metrics for achieving good environmental status using 11 descriptors, several of the descriptors are relevant for measuring or responding to OA.
- MSFD sometimes suffers from lack of clear definitions of good environmental status and related thresholds.
- The MSFD is currently under review and pending updates, particularly with a focus for being more inclusive of climate change information and strengthening ocean and climate policy alignment and objectives.
- Under climate change, there is a clear need to:
 - Strengthen monitoring and reporting in a more systematic manner.
 - Reduce local and land-based stressors.
 - Strengthen resilience capacity of keystone species.
 - Apply local scale modelling, including species biological research to help identify vulnerable seafood species and breed for tolerance.
- Regional assessments and regional seas conventions help address OA to some extent (e.g., Helcom, Barcelona Convention, OSPAR Convention and Arctic Council). This OA information should find its way into reporting and assessment of member states under the MSFD.

- While OA does lead to permanent changes in the hydrographic state of the seas, and it should be considered across descriptor 7, this descriptor is not the only one that is relevant to OA. Descriptors 1 (biodiversity), 5 (eutrophication), 8 (contaminants) and 11 (energy pollution) should also be considered.
- MSFD sets ecological boundaries for evaluating the capacity of marine ecosystems to deliver key services and sets an ecosystem-based approach to maritime planning. If specific activities or pollutions are increasing OA, they should be cited as relevant to evaluating ecological boundaries of marine ecosystems and addressed accordingly.
- While there are actions in place across the MSFD to reduce land-based co-stressors of OA. Though the impacts of OA have not been communicated, highlighted, or documented as key reasons to reduce coastal pollutions including wastewater, nitrogen, or other contaminants.
- Leveraging the MSFD to restore marine and coastal habitats such as blue carbon habitats could also help link MSFD to OA related activities (mitigation and remediation) and support climate resilience objectives more broadly across marine management.
- Further, there is a need to better link climate change impacts, mitigation, and adaptation efforts across the MSFD descriptors where relevant and communicate the need for this type of integration.
- MSFD is linked to the Marine Spatial Planning Directive (MSP) because both apply an ecosystem-based approach.
- MSP is a flexible policy tool that can be used to anticipate and adapt to changes in marine and maritime policies and plans.
- Most of the national MSP plans may be updated soon, notably to include objectives in terms of energy and biodiversity.
- With its medium-term approach, MSP is increasingly moving towards a better integration of climate change, including both mitigation and adaptation perspectives.
- There is an aim of having 30% of marine spaces managed within Marine Protected Areas by 2030.
- There might be an opportunity to understand how OA information can contribute to improved management and decision making.

Interventions From Participating Governments: Are countries including ocean acidification (OA) within annual reports? How does OA information support evaluations of good environmental status or taking an ecosystem – based approach to marine management strategies?

Monitoring and Evaluation

- There are many environmental objectives related to MSFD itself, and incorporating monitoring programs to ensure coastal ecosystem management, GES, measurement of stressors and in dialogue together across different scales. This includes better linking current MSFD descriptors to climate change impacts and response strategies to ensure more holistic alignment.
- There is also a connection to OA information in conducting more robust Environmental Impact Assessments across Marine Spatial Planning processes.
- Some countries have undertaken coastal risk assessments to human activities (cumulative impact assessments) and it was suggested that OA information should be included within these.
- The Arctic Council does have an OA research program (as does OSPAR) and thinking about better leveraging the regional conventions and bodies to support key messages and better link initiatives and recommendations for the Commission or individual states is critical.
- Comments that existing time series on OA is too short, though HELCOM is supporting OA information for governments across the Baltic Sea.
- It was acknowledged that there is a lack of OA research specifically when it comes to wider commercial fisheries management.
- Appreciation for the OSPAR OA Assessment (in its complexity and also pointed recommendations) was expressed, including a desire to see further integration of this information across Commission and individual policies.
- HELCOM and OSPAR are exploring possibilities for closer cooperation in relation to ocean acidification, and there is a desire to engage with the OA Alliance and member governments more directly in the future.
- It is important to ensure regional diversity in this conversation of updating MSFD and MSP in the context of climate change; this includes a focus on the Mediterranean, Black and Baltic Sea –not just the Arctic and NE Atlantic.

Policy Applications

- Some countries are looking to integrate MSFD and MSP in the same policy document, though research is lacking to fully incorporate climate change aspects at local and national scales.
- Some governments are including OA in MSFD chapters, including descriptors 1 (biological diversity) and 7 (hydrographic state)
- Some governments are including OA information as relevant in updated marine management plans, though haven't been particularly effective in linking related policies together across mitigation and adaptation actions—taking a more holistic view of resilience and well-functioning marine ecosystems. (example: Blue Forest directives/ commitments)
- Open ocean plans are more concrete in regards to incorporating climate change and OA information; though bringing this integration to the coastal zone is more difficult. Of course, this is because the complexities in monitoring at the coastal area which has more variability and challenges.
- Identified need for better sectoral and multiple ministerial engagements for effective implementation of MSFD and MSP; a nod to the cross-cutting nature of ocean and climate policy integration.
- Additionally, there is a need for dialogues and better communication between different scales of relevant governance. The starting point is the global framework, but information needs to be generated at the sea basin level, and actions are implemented at the national level.

Communication

- Additionally, public engagement needs to be strengthened to help people understand management choices being made along the coastline. This will require better communication and key messages about the importance of accounting for climate change across MSFD and MSP decision making.
- It may not be that more evidence is needed to accomplish this policy linking, but better awareness and communication.
- While some governments conduct their own national OA monitoring, they are not messaging it meaningfully. There should be a push for better linking this work to the UN Sustainable Development Goal relevant targets (7, 13 and 14) in addition to larger climate policies like the Green Deal or European efforts to reduce GHG emissions and establish renewable energy goals.
- Additional needs for communications efforts that help the public understand broadly how these climate and ocean planning strategies fit together. This can include the need for mitigation activities and other aspects of “no regrets” actions that improve marine ecosystem resilience.

Outcomes of Meeting:

As the science, research and observed impacts of climate-ocean continue to grow, there is a need for increased knowledge exchange and expertise on the substance and process for developing local, regional, and national marine management and policy responses in the face of cumulative change.

Specific outcomes of this workshop included:

1. Explored what role OA information should play in the updated Marine Strategy Framework Directive, including the acknowledgement that taking an ecosystem-based approach to management and achieving Good Environmental Status must better reflect the realities of climate change.
2. Explored avenues for European (national or EU) management and policy frameworks to take-up regional seas conventions information and recommendations, such as those by OSPAR's ICG-OA, and further support ongoing information needs of the EC.

Next steps:

3. Meeting organizers will coordinate with the EC to compile suggestions for how OA information could be better reflected or packaged across MSFD; linking climate change information, mitigation and response measures across relevant descriptors.
4. Meeting organizers will advance their European marine management and policy mapping in order to support national governments and the EC in further advancing or utilizing OA information and activities across relevant Conventions and Directives.
5. Meeting organizers will develop a communications product to support European national governments in understanding linkages and opportunities for integrated management across climate and ocean mitigation, adaptation, and resilience strategies.