Bund für Umwelt und Naturschutz Deutschland

BUND FRIENDS OF THE EARTH GERMANY

APOC Anthropogenic impacts on particulate organic carbon cycling in the North Sea

The seafloor, a climate miracle

Newsletter on cutting-edge research and policy developments

ISSUE 3 • DECEMBER 2023

Welcome to the third issue of our APOC newsletter. This time, we will delve into the sedimentary secrets of the Skagerrak, travel to the headquarters of the International Council for the Exploration of the Sea (ICES) in Copenhagen and explore the vulnerability of North Sea sedimentary carbon stores. We introduce our new platform to foster science-policy transfer, report on a dedicated parliamentary event in Berlin and our journey to the European Parliament in Brussels. As usual, an overview of current research highlights and an update on the political backdrop round off this newsletter. We hope you enjoy reading it!

- the APOC team

BACKGROUND | APOC (Anthropogenic impacts on particulate organic carbon cycling in the North Sea) is an interdisciplinary project funded by the BMBF as part of the MARE:N Coastal, Marine and Polar Research for Sustainability program. It combines the expertise of four marine research institutes and one organisation for environmental conservation. We are investigating the influence of environmental and climatic changes as well as anthropogenic pressures on the transport, cycling and storage of particulate organic carbon (POC) in the North Sea – today, in the past century and in the future.

Mud matters!

In a world full of natural wonders, the seabed stands tall as a carbon storage champion, permanently storing more of our planet's carbon than any other habitat. It is the last link in a chain of processes that removes CO_2 from the atmosphere, biologically binds it through plants and animals and finally stores it in sediments. Coastal waters in particular are real hotspots of this important carbon sink. In the latest edition of the BUND fact check series "Ocean & Climate", we take a look at this inconspicuous climate treasure on the seabed, the special role of silt and the effects of human activities such as fishing with bottom trawls!

ABOVE – Muddy ocean surface water. © Pixabay

AWI | BUND FRIENDS OF THE EARTH GERMANY | GEOMAR | hereon | UHH

News from the APOC project

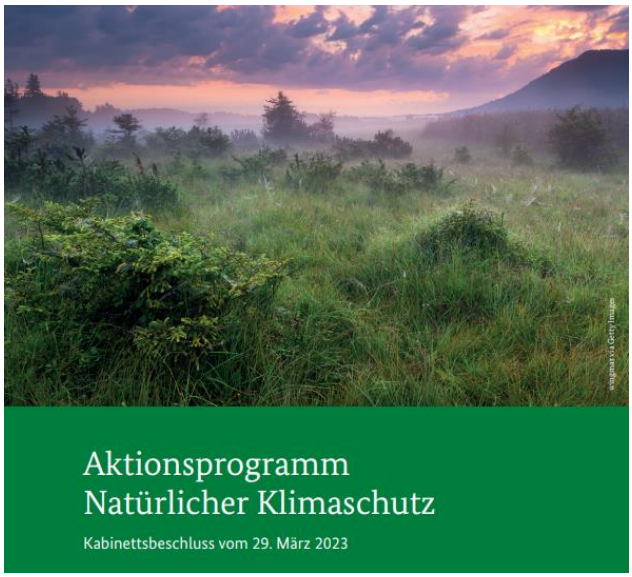
Follow the current activities, events and progress in our interdisciplinary project – from research cruises in the North Sea to first laboratory results and modelling efforts to joint workshops with project network and cooperation partners.

3rd APOC Workshop

AWI | BUND | GEOMAR | Hereon | UHH

In May 2023, the APOC family gathered in person for only the second time since the start of the project, and everyone was greatly looking forward to it. This year, our annual meeting led a total of 25 project members to the prestigious Helmholtz Centre Hereon in Geesthacht. It's truly remarkable to witness how, with each passing day, more pieces of the puzzle fall into place, and our initial project goals transform into realities. Beyond the professional enrichment we all experienced, we seized the opportunity to continue the process of bringing our findings to the political level and reach the relevant decision-makers who can drive meaningful change. We were honoured to welcome Dr. Tobias Höfig from Project Management Jülich (PtJ) on-site, whose input we greatly appreciate. As we approach the final stretch of project APOC, we are excited about the forthcoming developments. The dedication and hard work of our entire team are poised to bear fruit, which we are happy to share with all of you.

BELOW – Participants of the third APOC workshop at the Helmholtz Centre Hereon, Geesthacht. © U. Hanz (AWI)



ABOVE – German Action Plan on Nature-based Solutions for Climate and Biodiversity (© BMUV).

Incorporating APOC Insights: The German Federal Action Plan (ANK)

AWI | BUND | GEOMAR | Hereon | UHH

As reported in our last newsletter, the APOC consortium took the chance to provide a detailed statement in the public consultation on the German Federal Action Plan on Nature-based Solutions for Climate and Biodiversity (ANK). We are thrilled that some of our suggestions seem to have found their way into the final version of the ANK released by the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) in March this year. In detail, the Action Plan seeks to evaluate the climate protection function of marine sediments as well as their carbon storage capacity, suggests the establishment of climate protection zones and aims to provide incentives for the restriction and conversion of mobile bottom trawling.

ABOVE – Gravity core of research cruise AL561. © S. Sommer

Skagerrak's Sedimentary Secrets

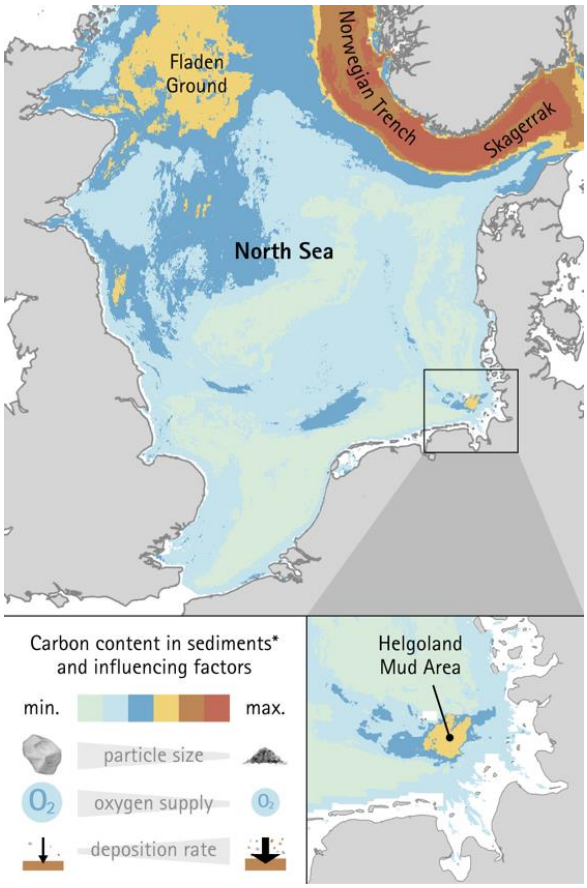
GEOMAR

One facet of our research involves the meticulous reconstruction of sediment and POC accumulation rates in the Skagerrak, the largest deposition hub for North Sea sediments. The fluctuations in Skagerrak's accumulation rates serve as a mirror for changes in the sedimentation system across the entire North Sea. Leveraging various time markers, such as ^{210}Pb, we scrutinized the temporal variability of sedimentation rates spanning the past century. We harnessed the power of machine learning models to decipher the spatial distribution of sediment accumulation rates in the Skagerrak. We also quantified accumulation rates of particulate biogenic silica, a key indicator of marine primary production, as discussed in "Biogenic Silica Cycling in the Skagerrak" (Spiegel et al., 2023). This approach enables us to pinpoint the contributions of local and lateral POC flows. We have also unravelled the contributions from various source regions of sediments transported into the Skagerrak, offering insights into where and to what extent natural and human influences have taken place. Our investigations involved scrutinizing the ratios of radiogenic isotopic composition and clay mineral composition of surface sediment samples present in the Skagerrak today. By comparing these results to samples from the broader North Sea, we were able to identify the primary source areas. Lastly, we are harnessing the variability in isotope composition with sediment depth to probe potential changes in the contributions of different sediment sources over time.

Navigating Marine Health: BSH "Meeresumwelt"-Symposium 2023

BUND | Hereon

The state of the North and Baltic Seas, the impact of human activities, and strategies to boost ecosystem health took centre stage at the 2023 Symposium on the marine environment. Hosted by the Federal Maritime and Hydrographic Agency of Germany (BSH) on May 9-10, we shared preliminary findings on North Sea sedimentary carbon stores and their vulnerability to the effects of mobile bottom trawling. Our insights once more shed light on the intricate balance of marine ecosystems and the need for sustainable practices. A key moment was our discussion with Sebastian Unger, Germany's first Special Representative for the Oceans, emphasizing the need to preserve muddy depocenters for climate protection.



ABOVE – Overview of carbon content in North Sea surface sediments and influencing factors. © J. Kuhlmann

Marine Protection Meets Climate Action: an Ocean Evening in Berlin

AWI | BUND | UHH

On March 30, 2023, an exciting event unfolded at the Jakob-Kaiser-Haus in Berlin under the banner of "Marine Protection is Climate Protection". BUND, in collaboration with Deutsche Umwelthilfe (DUH), sent out invitations to the parliamentary evening titled "More Fish for Climate Protection". The evening was a dedicated exploration of the pivotal roles that fish and sediments play in the ocean's capacity as a carbon sink. We delved into the crucial question of how an ecosystem-based approach to fisheries management can become a powerful ally in our battle against climate change. Dr. Tanja Busse led the evening with great commitment, and we were honoured to have the patronage of two members of the Bundestag, Anna Kassautzki and Daniel Schneider (both SPD). After the introductory words by executive directors Sascha Müller-Kraenner (DUH) and Antje von Broock (BUND), we welcomed Parliamentary State Secretary Claudia Müller (BMEL) as our keynote speaker. Dr. Sabine Kasten (AWI) and Dr. Maike Scheffold (UHH) captivated our guests with insightful perspectives on project APOC and latest research findings. The evening further benefited from the contributions of Dr. Hans-Otto Pörtner (AWI), Dr. Rüdiger Voss (CAU), and Björn Stockhausen (Policy Advisor/Greens). An all-round successful evening, leaving us not only enriched with new insights but also fostering inspiring conversations among participants. We are more motivated than ever to continue our efforts to unravel the mysteries of the marine carbon cycle and the human impact on it.

ABOVE – Impressions from the parliamentary evening "More Fish for Climate Protection", jointly organized by BUND and DUH, with APOC guest speakers Dr. Sabine Kasten (AWI, top right) and Dr. Maike Scheffold (UHH, bottom right).

ABOVE – Invitation to the third meeting of "Forum KliMeer" on December 15.

From Lab to Legislation: Introducing the "Forum KliMeer"

AWI | BUND | GEOMAR | Hereon | UHH

We are proud to announce the successful launch of the "Forum KliMeer"! This national forum, tailored to German stakeholders, provides a platform for discussions at the intersection of science, ministries, authorities, and environmental organizations. The topic? State-of-the-art research processes and findings pertaining to the vital role of marine ecosystems in the fight against climate change. This dynamic space explores pressing questions such as:

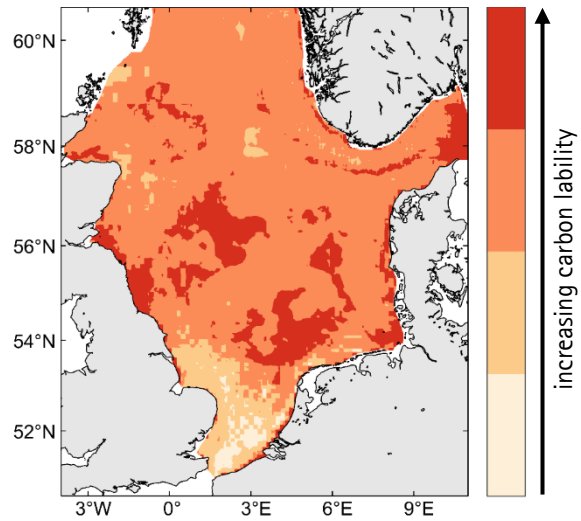
- What insights do current research processes offer?
- How can this shape policies and strategies?
- What input does the realm of marine conservation need from the scientific community?

BUND organised and coordinated the initiative as part of the APOC project with the primary goal to create connections and foster discussions between science and policy. The "Forum KliMeer" has already sprung into action with its inaugural meeting taking place in February this year, followed by a second insightful gathering in June. With the forum's momentum being unwavering, we are happy to announce that the next meeting is scheduled for December 15. Join us in our efforts to increase the synergy between scientific research and political implementation!

Sedimentary Carbon Stocks: from Quantity to Vulnerability

Hereon

Understanding the vulnerability of sediment carbon stocks is crucial for effective conservation strategies. It is not just about knowing the amount of carbon in sediments but also its lability, which is the portion of carbon that could potentially be remineralized and released as greenhouse gases like CO_2 if disturbed. Our numerical models provide valuable insights into this lability, helping us identify key areas where safeguarding the seabed could have a significant positive impact on natural carbon storage. These "hotspots" of carbon lability are found in depositional environments beneath productive waters that receive abundant supplies of fresh, highly labile organic matter. Notable examples include the Helgoland Bight, "Devil's Hole" north of Doggerbank, the Oyster Ground, the Skagerrak, and the north-eastern British coast. What is particularly concerning is that these areas are heavily fished with bottom-contacting gear, leading to a strong depletion of the carbon sequestration capacity in these regions. Our research sheds light on these critical aspects of marine ecosystems and their vulnerability to disturbances, helping inform conservation efforts.



ABOVE – Carbon vulnerability index of North Sea sediments (unpublished, © Lucas Porz)

ABOVE – Participants of the ICES workshop. © ICES

Exploring the Impact of Fishing on Oceanic Carbon with ICES

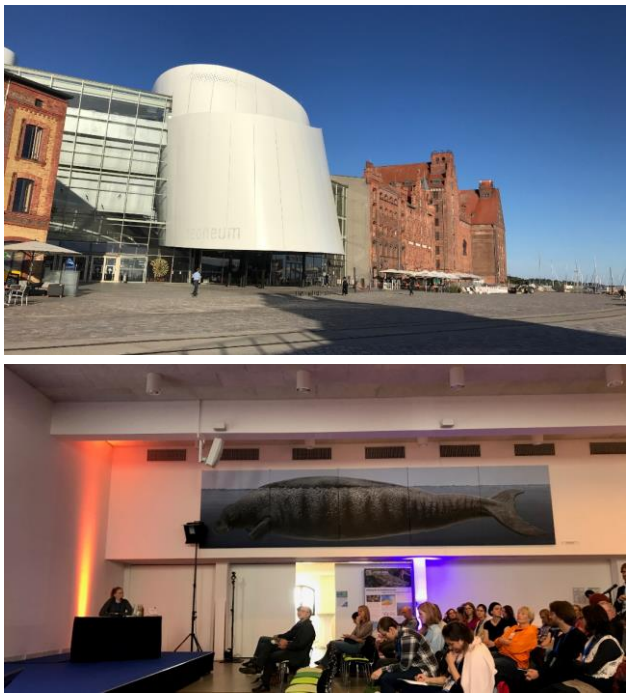
BUND | Hereon

We are excited to share some news regarding a freshly inaugurated workshop by the International Council for the Exploration of the SEA (ICES). "WKFISHCARBON" has set out to evaluate the influence of fishing activities on oceanic carbon. With the ocean playing a crucial role in regulating atmospheric CO_2 levels, this topic is drawing increasing attention. The workshop's primary objective was to undertake a comprehensive review of the intricate facets of fishing activities, encompassing its effects on the marine carbon budget and sequestration as well as its environmental footprint. The ultimate goal? To pave the way for future research as well as ecosystem-informed advice and management approaches by charting a clear roadmap. This ambitious journey has been steered by the dynamic duo of Emma Cavan (Imperial College London) and David Reid (Marine Institute). The inaugural meeting took place from April 24th to 28th at ICES headquarters in Denmark, and the corresponding report is eagerly awaited. From APOC, Dr. Jannis Kuhlmann (BUND) joined the workshop on-site, while Dr. Lucas Porz (Hereon) presented an online session on the impact of mobile bottom trawling on the capacity of seafloor sediments to store carbon. We are genuinely enthusiastic about the potential of this workshop to contribute to the forefront of marine and environmental science and policymaking.

Rising Awareness of the Climate Value of Sedimentary Carbon

BUND | Hereon

APOC took further chances to promote awareness of sedimentary carbon stores and their climate value. In June 2023, Dr. Sabine Kasten (AWI) was invited to take part in the specialist workshop on "The role of marine macrophytes in the North and Baltic Seas for natural climate protection in Germany" organized by the BfN in Rostock. She presented the role of muddy sediments as a natural carbon sink and elaborated on the impacts of bottom trawling on its function. During the 6th international workshop "Progress in Marine Conservation" in September 2023 at the Ozeaneum in Stralsund, Dr. Sabine Kasten (AWI) and Dr. Wenyan Zhang (Hereon) presented an overview of the aims and research approaches in project APOC and introduced the manuscript "Intense and persistent bottom trawling impairs long-term carbon storage in shelf sea sediments" (Zhang et al.), which is currently under review at *Nature Portfolio*.



ABOVE – Impressions from the OZEANEUM in Stralsund, venue of the 6th International Conference on Progress in Marine Conservation. © Dr. Sabine Kasten

The APOC effect: Transforming Science into Policy in Brussels

AWI | BUND | Hereon

Bridging the gap between cutting-edge scientific research and political decision-makers – this is one of the overarching goals in project APOC. And that is precisely what we orchestrated on June 28 at the EU Parliament in Brussels. BUND, in close collaboration with NGO partners, organized the expert briefing "What Can Blue Carbon Contribute to Climate Action and Nature Protection". Under the esteemed patronage of Members of Parliament Catherine Chabaud (RENEW), Grace O'Sullivan (Greens), and João Albuquerque (S&D), we brought together a diverse panel of international experts. Their goal? To explore the role of coastal ecosystems, fish and sediments in carbon storage and discuss the imperative need for their recognition as well as protection at both the EU and UN levels. The stage was set, and among the speakers were Dr. Bettina Taylor (BUND) and Dr. Wenyan Zhang (hereon) from the APOC team. They presented research findings from the North Sea, revealed the profound impact of mobile bottom trawling on carbon storage in seafloor sediments, and illuminated the benefits of marine conservation for climate protection. Joining the panel of speakers were Dr. Angela Martin (University of Adger), Loreley Picourt (Executive Director of the Ocean & Climate Platform) and Alice Belin (DG ENVI of the European Commission).

ABOVE – Expert briefing on "Blue Carbon" at the European Parliament in Brussels. Top right: Participating APOC team members Moritz Holtappels (AWI), Lucas Porz (Hereon), Wenyan Zhang (Hereon), Jannis Kuhlmann (BUND) and Bettina Taylor (BUND).

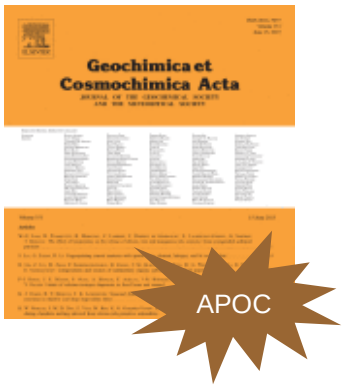
In brief – current research highlights

In this section, we spotlight selected literature with high relevance around the APOC-specific topics of the marine carbon cycle and human activities. In addition to our own research, this also includes external results from peer-reviewed studies and reports.

A first estimate of the effect of offshore wind farms on sedimentary organic carbon stocks in the Southern North Sea

Heinatz & Scheffold (2023) | Front. Mar. Sci. | DOI: 10.3389/fmars.2022.1068967

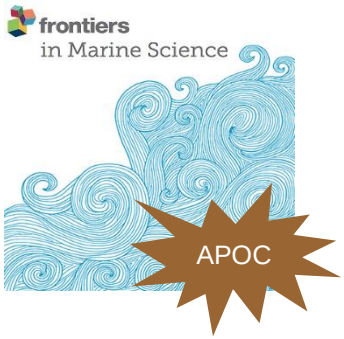
Offshore wind farms have complex effects on sedimentary organic carbon (OC). While they release OC during construction and decommissioning, they can increase the transfer and stock of OC during their operational phase. The authors provide a first-order assessment of these effects for offshore wind farms in the Southern North Sea.



Temporal evolution of shallow marine diagenetic environments: Insights from carbonate concretions

Loyd et al. (2023) | Geochim. Cosmochim. Acta | DOI: 10.1016/j.gca.2023.04.022

Early diagenesis of marine organic matter dramatically affects Earth's surface chemistry by changing the burial potential of carbon and promoting the formation of authigenic mineral phases including carbonate concretions. The isotope record of the latter in part reflects changes in organic matter availability and marine oxidation state, highlighting connections with the subsurface biosphere and diagenesis throughout geologic time.



Biogenic silica cycling in the Skagerrak

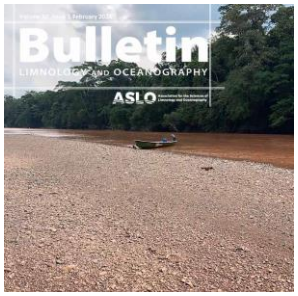
Spiegel et al. (2023) | Front. Mar. Sci | DOI: 10.3389/fmars.2023.1141448

Using geochemical data and modelling, this study analysed the cycling of particulate biogenic silica (bSi) and the burial ratio with regard to organic carbon (bSi/TOC) in the Skagerrak. Notably, the latter is distinctively lower than at other continental margins. The authors propose repeated resuspension and deposition during long particle transport may contribute to the observed decoupling of the bSi/TOC ratio in Skagerrak sediments.

Assessing global-scale organic matter reactivity patterns in marine sediments using a lognormal reactive continuum model

Xu et al. (2023) | Biogeosciences | DOI: 10.5194/bg-20-2251-2023

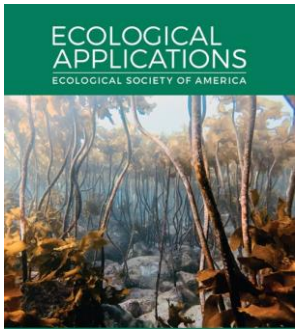
Organic matter (OM) degradation in marine sediments is largely controlled by its reactivity and profoundly affects the global carbon cycle. This study proposes a new framework that allows predicting OM reactivity in data-poor areas based on readily available (or more easily obtainable) information.



Benthic Invertebrates on the Move: A Tale of Ocean Warming and Sediment Carbon Storage

Bianchi et al. (2023) | L&O Bulletin | DOI: 10.1002/lob.10544

Ongoing climate-induced shifts in marine organism distributions can affect the fate of organic carbon in marine sediments. This study explores the effect of changes in the distribution of snow crab and lobster, two commercially important seafloor species, on the rates of carbon decomposition and burial in the North-eastern Atlantic.



Mapping marine benthic biological traits to facilitate future sustainable development

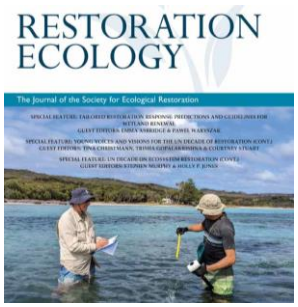
Bolam et al. (2023) | Ecol. Appl. | DOI: 10.1002/eap.2905

This study addresses the need to understand the relationship between the impact of human activities and the structure and function of seabed ecosystems. Harnessing a Big Data approach, it demonstrates the creation of large-scale maps reflecting spatial differences in biological traits of benthic assemblages. Such maps can aid decision-making processes for managing anthropogenic activities and marine spatial planning.

Assessing the impact of the global subsea telecommunications network on sedimentary organic carbon stocks

Clare et al. (2023) | Nat. Commun. | DOI: 10.1038/s41467-023-37854-6

Recent studies revealed profound seafloor impacts and sedimentary carbon loss due to fishing and shipping, yet most other human activities in the ocean have been overlooked. This study assesses the disturbance related to the extensive subsea telecommunication network. Cable burial worldwide has disturbed up to 11.26 Mt of organic carbon.



Conservation in coastal soft-sediment ecosystems: valuing places and recovery

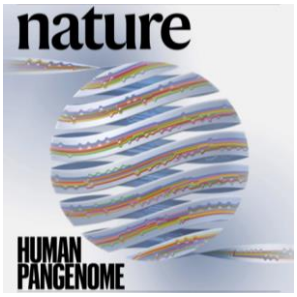
Evans & Thrush (2023) | Restor. Ecol. | DOI: 10.1111/rec.13979

Coastal soft-sediment environments are heavily impacted by human activities and require ecosystem restoration to combat degradation. Global initiatives aim to protect 30% of the world's oceans by 2030. This paper offers practical approaches for selecting areas in these environments to maximize effective ecosystem restoration, emphasizing the importance of science-based decision-making to achieve restoration goals.

The interplay of temperature and algal enrichment intensifies bioturbation of the intertidal amphipod *Corophium volutator*

Farrell et al. (2023) | J. Exp. Mar. Bio. Ecol. | DOI: 10.1016/j.jembe.2022.151837

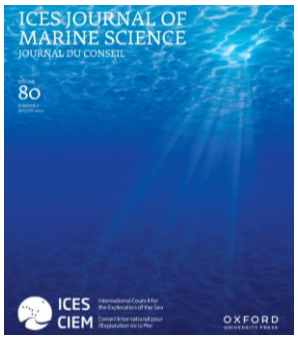
Bioturbation is a central transport process for ecosystem functioning in soft sediment habitats. Changes in bioturbation activities holds ramifications for processes such as carbon sequestration or nutrient cycling. This study examines the effect of temperature and organic enrichment on the dominant bioturbator in the Wadden Sea, *C. volutator*.



Quantifying the carbon benefits of ending bottom trawling

Hiddink et al. (2023) | Nature | DOI: 10.1038/s41586-023-06014-7

Bottom trawling disrupts natural carbon flows in seabed ecosystems due to sediment mixing, resuspension and changes in the biological community. The 2021 study by *Sala et al.* has sparked discussions about the potential magnitude of CO_2 release from this fishing gear. In this comment, *Hiddink et al.* raise concerns about a substantial overestimation of carbon mineralisation rates and hence trawling impact by *Sala et al.*



Evaluating the sustainability and environmental impacts of trawling compared to other food production systems

Hilborn et al. (2023) | ICES J. Mar. Sci. | DOI: 10.1093/icesjms/fsad115

Review on the bottom trawling impact on target-species, benthic communities, bycatch and discards, carbon footprint from fuel use, and carbon sequestration. Though the latter remains highly uncertain, the authors argue that well-managed bottom trawl fisheries could have a lower environmental impact than livestock or fed aquaculture.

Greater North Sea Ecoregion – Ecosystem overview

ICES Advice (2022) | DOI: 10.17895/ices.advice.21731912

The International Council for the Exploration of the Sea (ICES) uses risk-based methods to identify the main human pressures of the Greater North Sea ecoregion and explain how these affect the key ecosystem components. This ecosystem overview provides information on trends in recent years, thus, giving the context for ecosystem-based management.

Greater North Sea Ecoregion – Fisheries overview

ICES Advice (2022) | DOI: 10.17895/ices.advice.21641360

The Greater North Sea ecoregion fisheries overview summarizes activities of different fishing fleets, provides information on catch and bycatch compositions, introduces fisheries management frameworks, agreements and measures, as well as evaluates ecosystem effects of fishing activities. It increases the capacity to provide the integrated ecosystem advice required to meet current and future needs of stakeholders.

Changing the narrative and perspective surrounding marine fish

Martin et al. (2023) | Mar. Policy | DOI: 10.1016/j.marpol.2023.105806

Fish are essential components of the ocean carbon sink. However, the focus in marine policies remains on achieving the maximum sustainable yield from this resource. This study challenges these management perspectives, emphasizing the importance of fish in carbon storage, ecosystem functioning, and, ultimately, sustainable fisheries and climate regulation. The authors identify pathways to better integrate fish carbon functions into blue carbon and fisheries management.

Long-term organic carbon preservation enhanced by iron and manganese

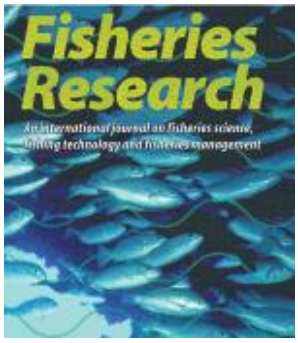
Moore et al. (2023) | Nature | DOI: 10.1038/s41586-023-06325-9

An investigation of the preservation of sedimentary organic carbon (OC) in marine environments. Incubation experiments find that iron and manganese ions and minerals at temperatures relevant to continental margins can significantly accelerate OC preservation. Variable inputs of iron and manganese to the ocean could thus exert a substantial but hitherto unexplored impact on global OC preservation.

Trophic rewilding can expand natural climate solutions

Schmitz et al. (2023) | Nat. Clim. Change | DOI: 10.1038/s41558-023-01631-6

Natural climate solutions aim to combat climate change by enhancing carbon capture and storage in ecosystems. The authors argue that protecting and restoring wild animals and their functions can boost carbon capture and storage, making it a crucial part of efforts to prevent climate warming beyond 1.5°C.



Trawling for evidence: An ecosystem-based multi-method trawling impact assessment

Tinlin-Mackenzie et al. (2022) | Fish. Res. | DOI: 10.1016/j.fishres.2023.106858

An investigation of the impacts of trawling on *Nephrops* (lobster genus) and whitefish along the Northeast England coast, assessing benthic communities and habitats at muddy sediment sites across a gradient of fishing pressure. It reveals significant negative effects of trawling on macrofauna, meiofauna and sediment characteristics, and highlights the importance of using multiple methods for monitoring of disturbances.

Linking Species Functional Traits to Specific Biogeochemical Processes under Trawling Pressure

Tsikopoulou et al. (2022) | Biology | DOI: 10.3390/biology11101378

An investigation of the impact of otter trawling in the Cretan Sea on the functional traits of benthic invertebrates and specific biogeochemical processes, with a significant impact recorded for sedimentary organic carbon. Trawling disturbance is shown to reduce bioturbation and burrowing activities, thus, decoupling the species-sediment relations and affecting nutrient and carbon cycling.

Contribute to the Euro-Carbon Database!

The Euro-Carbon Database

Do you have carbon data from marine sediments in European regional seas? The Euro-Carbon Database aims at compiling sediment organic carbon data for a baseline on a European regional sea scale and better informing seafloor management. Please visit the website of the initiative or contact Anna E. Løvgren Graversen for additional information.

The transition of marine environmental policy

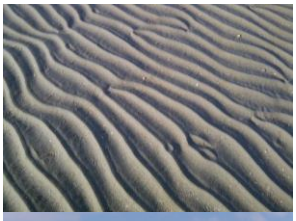
How does the political framework in the North Sea change? What influence does this have on marine anthropogenic pressures and the state of marine carbon sinks? This section summarizes important events at regional, national and international level.

The worrying environmental status of the North-East Atlantic and the Baltic Sea

OSPAR Quality Status Report 2023 | HELCOM 3rd Holistic Assessment of the Baltic Sea

OSPAR and HELCOM, the intergovernmental commissions for the North-East Atlantic and Baltic Sea, have recently released their latest assessments on the health of these vital marine regions. They also offer a comprehensive look at environmental and human pressures affecting these ecosystems. Despite the measures taken by contracting parties, the effects of human activities and climate change continue to reinforce biodiversity loss, pollution, and habitat degradation in OSPAR and HELCOM maritime areas. There is an ever-more pressing need to address the drivers and thereby increase the health and resilience of the marine ecosystems. The assessments also play a crucial role in tracking the implementation and effectiveness of the North-East Atlantic Environmental Strategy (NEAES 2030 and NEAES 2010-2020) and the Baltic Sea Action Plan (BSAP). They form the foundation of policy-making for both commissions and support EU Member states in meeting their reporting obligations under the Marine Strategy Framework Directive (MSFD), the EU's main tool to protect and conserve the health of our coasts and seas. Entering the third cycle of implementing this directive, member states are obliged to revisit and update the assessment of their territorial waters – including the definition of criteria for achieving a good environmental status and setting environmental objectives. Scientific reports recently published under the MSFD for the German part of the North and Baltic Seas emphasize the sobering findings of OSPAR and HELCOM: neither have human pressures decreased sufficiently, nor has the condition of marine biodiversity and marine ecosystems significantly improved. On the contrary, harmful nutrient input, pollutants, litter, and underwater noise continue to affect the waters on a broad scale.

The Wadden Sea: a UNESCO World Heritage Site under pressure



Wadden Sea Quality Status Report – Individual Chapters

The health of the UNESCO World Heritage Wadden Sea faces challenges similar to its neighbouring regional seas. The last Quality Status Report, dating back to 2017 and partially renewed in 2022, paints a concerning picture, echoing the findings of OSPAR and HELCOM assessments. In response to these issues, the Environmental and Energy Ministers from Schleswig-Holstein, Lower Saxony, and Hamburg in Germany have come together in what is known as the Cuxhaven Declaration. They are advocating for stronger protection of the German part of the World Heritage site. Among other things, their plan involves utilizing funds generated from offshore wind park auctions to enhance Wadden Sea protection and support eco-friendly fisheries. The funds will also be directed towards creating sanctuaries and habitats for the diverse marine life in the area.

The Ostend Declaration: Transforming the North Sea into a "Green Power Plant"

Ostend Declaration of second North Sea Summit

During the second North Sea Summit in Belgium on April 24, a total of nine countries and the European Commission joined forces to sign the Ostend Declaration. This landmark agreement sets an ambitious goal to increase offshore wind capacity to 300 GW by 2050, effectively doubling the initial commitment of 150 GW by 2050, made at the first such summit in Esbjerg last year. In addition to the long-term target, Belgium, Denmark, France, Germany, Ireland, Luxembourg, the Netherlands, Norway, and the UK also established an interim goal to achieve 120 GW of offshore wind capacity by 2030. While these commitments showcase dedication to renewable energy, questions arise regarding their impact on the North Sea's already compromised environmental health. It remains to be seen how this expansion will affect the marine ecosystems, especially in the context of their ability to sequester and store carbon.

A Competition for Space: Navigating Germany's Path to Offshore Wind Expansion

German Site Development Plan (German only)

The German government has set the target to establish 70 GW of wind capacity within its exclusive economic offshore zone by 2045. The expansion of offshore wind power has raised concerns about its potential impact on marine ecosystems in the already highly industrialised North Sea. To facilitate the expansion, the Maritime and Hydrographic Agency (BSH) published a site development plan in early 2023 outlining specific areas for the planned expansion. A 2022 study by Fraunhofer IWES stated that more efficient technologies and co-use of areas are required to reach the ambitious targets and prevent other uses of the sea areas, such as environmental reserve zones, from being infringed.

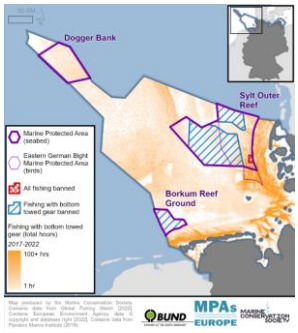
The Nature Restoration Law (NRL): A Game Changer for Europe's Ecosystems

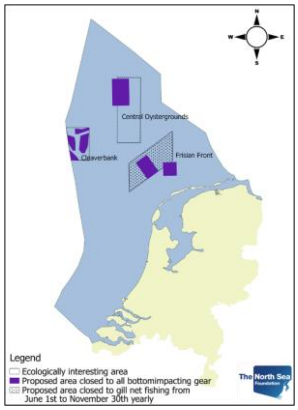
Commission's Proposal | Council's General Approach | Parliament's Amendments

In a significant development, the European Commission proposed the Nature Restoration Law in June 2022, as a pivotal component of the European Green Deal and the 2030 Biodiversity Strategy. This ground-breaking law sets binding targets aimed at revitalizing healthy ecosystems throughout Europe. If put into action, it has the potential to reshape the landscape of habitat and species conservation in the EU. The NRL requires at least 20% of Europe's land and maritime areas to be restored and protected by 2030, with a more extensive goal of restoring all ecosystems in poor to bad quality by 2050. For the restoration and protection of marine ecosystems, member states will have to restore specific ecosystems such as seagrass beds or seafloor sediments, serving as valuable carbon sinks and stores that mitigate climate change. This summer, the EU Parliament and the EU Council adopted their own proposals for the NRL – in part considerably weaker than the EU Commission's initial proposal. In the trilogue, the final negotiations between the positions of the Parliament, Council and Commission, a provisional agreement on the new law has been reached in November. A final decision on the NRL is expected in the first quarter of 2024.

Expanding Protection: New Regulations towards a Healthier North Sea

New EU fisheries measures for German and Dutch Marine Protected Areas (MPAs)

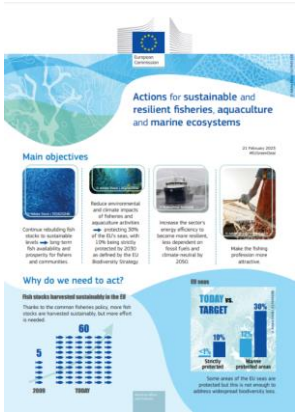




Significant advancements in safeguarding marine habitats have been achieved in North Sea Marine Protected Areas (MPAs), thanks to the adoption of comprehensive fisheries measures by the European Commission on February 16. These measures substantially restrict fishing within German (Borkum Reef Ground, Dogger Bank, Sylt Outer Reef and Eastern German Bight) and Dutch (Cleaver Bank, Frisian Front and Central Oyster Grounds) MPAs protected under the Natura 2000 and marine strategy framework (MSF) directives. They aim at keeping sensitive seabed habitats, such as sandbanks and reefs, from damage of bottom trawling. Additionally, they seek to reduce incidental catches of harbour porpoises and six seabird species from being entangled in gillnets and other nets. In the German MPAs, Borkum Reef Ground is now completely closed to bottom trawling, and 62% of the Sylt Outer Reef's protected area follows suit. However, comprehensive measures to limit bottom trawling on the Dogger Bank, the North Sea's largest sandbank, are still pending due to Brexit-related complexities. For the Dutch MPAs, the newly adopted measures provide a total seabed protection of 5% (2,869 km^2) within the Dutch exclusive economic zone, a significant improvement from the previous 0.3% protection. While most areas remain open to various fishing techniques, certain management zones are closed to all bottom-impacting fisheries. Although these measures are aligned with EU commitments for 30% marine protection by 2030, as outlined in the EU Biodiversity Strategy, there is an ongoing need for further actions to ensure the comprehensive safeguarding of vulnerable marine ecosystems. This holds particularly true for climate-relevant habitats that are not currently acknowledged within the existing directives, such as carbon-rich soft sediments.

EU's Commitment for Resilient Fisheries and Thriving Marine Ecosystems

European Commission's Fisheries Communication Package



On March 21, the European Commission unveiled its "Action Plan: Protecting and Restoring Marine Ecosystems for Sustainable and Resilient Fisheries". This initiative is part of a broader strategy to enhance the sustainability and resilience of the EU's fisheries and aquaculture sector. The primary goal of this action plan is to reinforce the Common Fisheries Policy's (CFP) commitment to maintaining healthy fish stocks and preserving abundant biodiversity in our oceans. It focuses on mitigating the adverse impacts of fishing activities on marine ecosystems, particularly issues related to by-catch of sensitive species and its cascading effects on marine food chains. Additionally, it seeks to enhance selectivity of fishing gear and urges all Member States to implement effective fisheries conservation measures to manage MPAs. Furthermore, the action plan targets the reduction of seabed disturbances caused by fishing equipment within MPAs. The Commission calls on Member States to gradually phase out mobile bottom fishing in all MPAs by 2030 and prohibit it in newly established MPAs. This aligns with UN's Kunming-Montréal biodiversity agreement, in which 196 countries, including the EU, committed to reaching a 30% target of protected land and oceans by 2030.

Imprint

Publisher: Bund für Umwelt und Naturschutz Deutschland e.V. (BUND)
Friends of the Earth Germany
Kaiserin-Augusta-Allee 5 • 10553 Berlin • Germany
Tel. (030) 27586-40 • Fax. (030) 27586-440 • info@bund.net • www.bund.net

Authors/Layout: BUND Marine Protection Office

V.i.S.d.P.: Petra Kirberger

Pictures: Cover page © Pixabay | p.2 top © BMUV | p.2 bottom © U. Hanz, AWI | p.3 top © S. Sommer, GEOMAR | p.3 bottom © J. Kuhlmann, BUND | p.4 bottom left © DUH | p.4. bottom right © J. Kuhlmann, BUND | p.5 top © J. Kuhlmann, BUND | p.5 bottom © L. Porz, Hereon | p.6 top © ICES | p.6 bottom © S. Kasten, AWI | p.7 © J. Kuhlmann, BUND | p.8-11 © frontiers, ICES, MDPI, Nature, Oxford academic, Science Direct, Wiley | p.11 bottom © MPA-Europe | p.12-14 © Belgian Offshore Platform, MCS, BSH, European Commission, HELCOM, OSPAR, Pixabay, The North Sea Foundation

Last Update: December 2023

Contact: BUND Marine Protection Office • Parkallee 20 • 28209 Bremen • Germany
Tel. (0421) 79002-32 • Nadja.Ziebarth@bund.net
https://www.bund.net/meere

Subscribe to our Newsletter!
(published twice a year)

Bund für Umwelt und Naturschutz Deutschland

BUND
FRIENDS OF THE EARTH GERMANY

The project on which this newsletter is based has been funded by the Federal Ministry of Education and Research under the funding code 03F0874E. The author is responsible for the content of this publication.

Bundesministerium für Bildung und Forschung