



Activity 3:
A3 – Support for and harmonisation of regional work on Descriptor 10 (marine litter)



BLUES



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HELCOM BLUES – Activity 3

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Universität Hamburg
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CENTRUM
FÜR ERDSYSTEMFORSCHUNG
UND NACHHALTIGKEIT (CEN)

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Overview of Task A3.2 - microlitter



Task / Subtask	Expected results and deliverable
Subtask 3.2.1	Review / evaluation of current approaches applied for the water column and seabed sediment
Subtask 3.2.2	Drafting of guidelines for the detection of microlitter in the water column and seabed sediments
Subtask 3.2.3	Data collection from HELCOM countries on microlitter in the water column and seabed sediments
Subtask 3.2.4	Specification of prerequisites for the monitoring of microlitter in the water column and seabed sediments
Subtask 3.2.5	Screening study on microlitter in the water column (LV) and seabed sediments (DE)





Results A3.2.2

Aim: Review / evaluation of current approaches applied for the water column and seabed sediment

- A survey on currently applied or planned monitoring strategies on microlitter in the water column and in seabed sediments was conducted.
- Feedback was received through dedicated national experts from nine HELCOM countries on both compartments.
- Information and data were recorded on:
 - general data (status of the monitoring, availability of data)
 - sampling strategy
 - sample treatment
 - methods of particle analysis
- Survey outcome was presented and discussed within a technical workshop (30 June 2021) and served as basis for A3.2.1 (Drafting of guidelines)





Results A3.2.1

Aim: Drafting of guidelines for the detection of microlitter in the water column and seabed sediments

- Draft guidelines for both compartments were drafted based on the compilation of existing monitoring strategies and methods (A3.2.2 method survey).
- Contents were discussed with national experts during two technical workshops and adapted accordingly (February and September 2022).
- Draft guidelines were considered in the HELCOM framework and are now included in the [HELCOM Monitoring and Guidelines](#)





Results A3.2.3

Aim: Data collection from HELCOM countries on microlitter in the water column and seabed sediments

- Data availability was surveyed based on a literature review:
microlitter in the water column: data are scarce and hardly comparable due to method variability; data on microlitter in water column are rarely available within EMODnet

microlitter in seabed sediments: data are very scarce and not comparable due to method variability; data on microlitter in seabed sediments are not yet available within EMODnet





Results A3.2.4

Aim: Specification of prerequisites for the monitoring of microlitter in the water column and seabed sediments

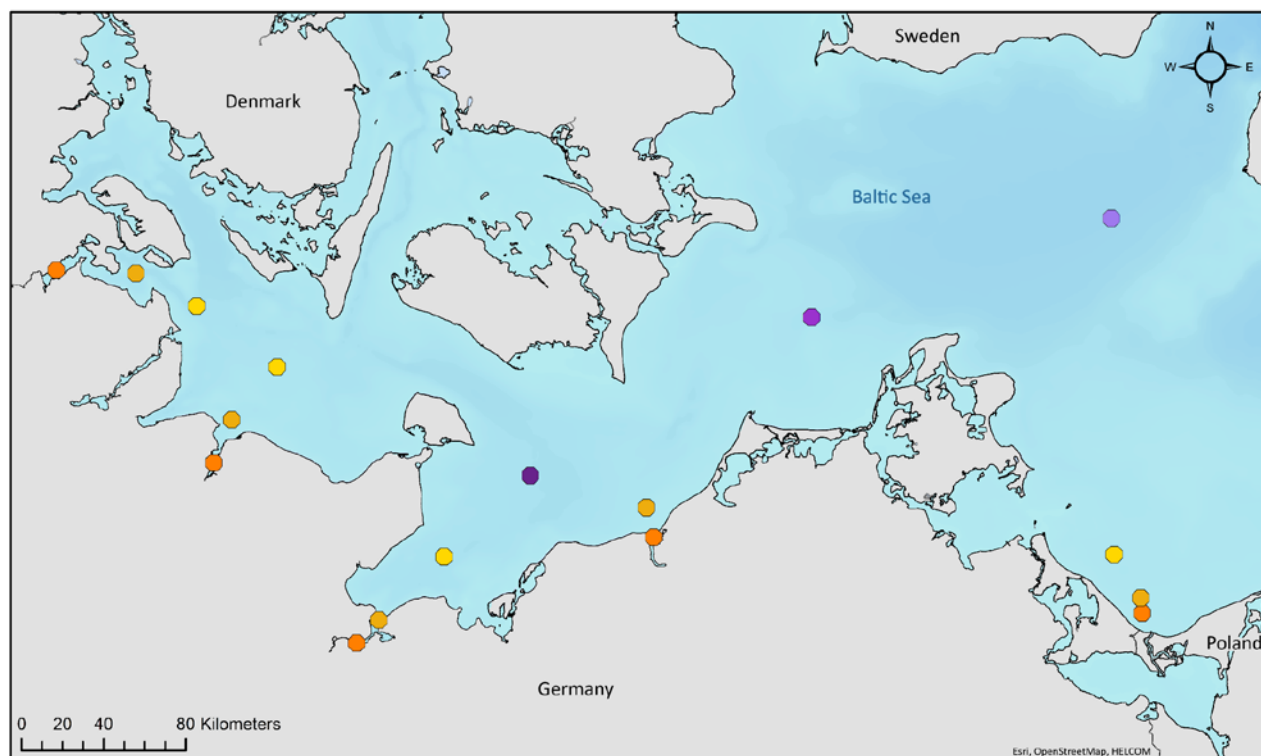
- A document on general prerequisites for future monitoring has been drafted according to discussions during a technical workshop (December 2022).
- Major points have been identified in terms of logistics, resources, and (still) lacking research advances.
- The draft document will be adapted based on further comments and will be shared with the relevant HELCOM working groups for consideration.



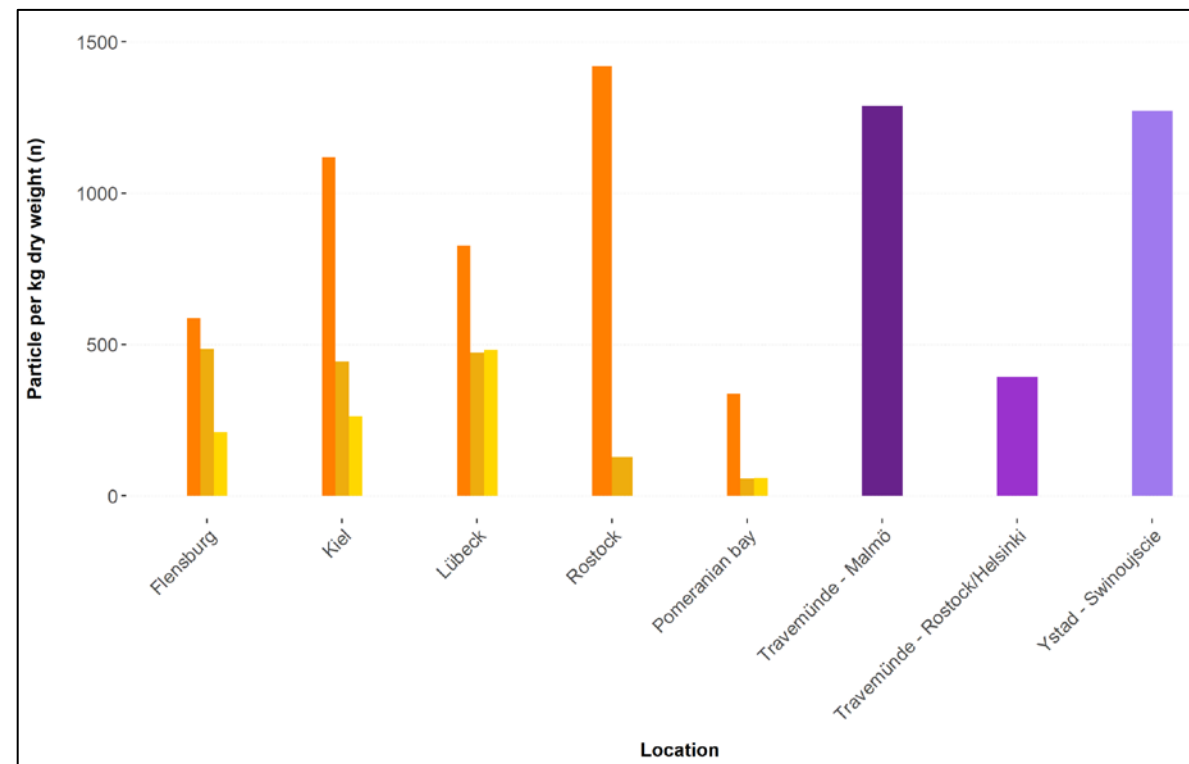


Results A3.2.5

Aim: Screening study on microlitter in the water column (LV) and seabed sediments (DE)



Location of sampling sites in the German Baltic Sea.



Particle concentration per kg dry weight (kg DW) of sediment per sampling area.





Aim: Screening study on microlitter in the **water column** (LV) based on literature study

Area	Publ. date	Sampling method	Mesh size, μm	Concentration	Unit	Reference
Eastern Baltic Sea	2022	Manta trawl	330	0.11 - 0.65	items/m ³	https://doi.org/10.3389/fmars.2022.875984
Gulf of Riga, Latvia	2021	Manta trawl	300	0.09 - 4.43	items/m ³	https://doi.org/10.1016/j.marpolbul.2021.112860
Gulf of Finland, Finland (thin layers in the stratified)	2021	WP2 net	100	0 - 1.6	items/m ³	https://doi.org/10.1016/j.envpol.2020.115700
				0 - 766	ng/m ³	
		Jussi sampler, 30 L	50	0.02 - 1.7	items/L	
				0 - 775	ng/L	
Baltic Sea, east of Bornholm, Open Baltic Sea, close to Polish coast	2021	Manta trawl	335	0.019 - 0.022	items/m ³	https://doi.org/10.1016/j.marpolbul.2021.112150
				3112 - 3554	items/km ²	
				0.003 - 0.004	items/m ²	
waters surrounding Sweden, Baltic Sea	2020	Manta trawl	333	0 - 0.46	items/m ³	https://doi.org/10.1016/j.marpolbul.2020.111019
		Pump, 20 m ³	300	0 - 10.5		
			50	0 - 70.3		
Gullmar fjord on the Swedish west coast	2020	Manta trawl	300	0.18 - 0.92	items/m ³	https://doi.org/10.1007/s11356-019-07274-5
		Pump, 20 m ³		0 - 0.4		
Kiel Fjord, southwest Baltic Sea	2020	Manta trawl	300	0.0 - 1.8	items/m ³	https://doi.org/10.1016/j.scitotenv.2020.139493
(in layers of stratified Baltic Sea)	2019	PLEX bulk sampler	174	15.4 - 79.1	items/m ³	https://doi.org/10.1016/j.marpolbul.2018.11.047
Baltic Proper	2018	Niskin bottles 0-217.5m, 10 and 30 L	174	0.1 - 0.9	items/L	https://doi.org/10.1016/j.marpolbul.2017.10.049
South Funen Archipelago, Baltic Sea	2018	Manta trawl	300	0,04 - 0,09	items/m ³	https://doi.org/10.1016/j.marpolbul.2018.01.066
		Bulk sampler, 5L	5000, 1000, 300, <300	1.03 \pm 0.80	items/L	
Stockholm Archipelago, Baltic Sea	2017	Manta trawl	335	1.56 \times 10 ⁴ - 6.18 \times 10 ⁵	items/km ²	https://doi.org/10.1016/j.marpolbul.2017.04.062
				0.19 - 7.73	items/m ³	
Gulf of Finland, northern Baltic Sea	2016	Manta trawl	333	0.3 - 2.1	items/m ³	https://doi.org/10.1016/j.marpolbul.2016.06.065
			300	0 - 3.4		
		Submersible pump	100	0 - 8.2		

Results summary - microlitter



Task / Subtask	Expected results and deliverable	Results
Subtask 3.2.1	Review / evaluation of current approaches applied for the water column and seabed sediment	Compiled information for all HELCOM countries updated and available
Subtask 3.2.2	Drafting of guidelines for the detection of microlitter in the water column and seabed sediments	Accomplished and included in the HELCOM Guidelines
Subtask 3.2.3	Data collection from HELCOM countries on microlitter in the water column and seabed sediments	Lack of comparable data identified
Subtask 3.2.4	Specification of prerequisites for the monitoring of microlitter in the water column and seabed sediments	Major hindrances identified and draft document suggested
Subtask 3.2.5	Screening study on microlitter in the water column (LV) and seabed sediments (DE)	Guidelines validated. Data on microlitter in seabed sediments (DE) available





Key messages

- Key messages for **science**

- 1) There is still need for further discussions especially in terms of the selection of monitoring stations, the precision on QA/QC measures within sample processing and the data reporting.
- 2) There is still a lack of research findings concerning spatial and temporal representativeness of the monitoring strategy.
- 3) Data from the screening study on microlitter in seabed sediments indicate decreasing concentrations with increasing distance to the coastline.

- Key message for **policy makers**

- 1) Major hindrances for microlitter monitoring are mostly related to logistics and resources that have to be solved for a consistent HELCOM wide monitoring and the generation of baseline and threshold values.
- 2) Cooperation between countries in terms of monitoring sampling campaigns and laboratory analyses should be further evaluated.
- 3) Additional efforts have to be made to support scientific approaches to assess the representativeness of data.





Use of results so far and in future

- HELCOM → new monitoring guidelines
- BSAP → action HL32
- MSFD → reporting on D10; support for monitoring programmes
- EU processes → TG Litter consideration of HELCOM monitoring guidelines in MSFD guidance chapter (draft)





Data for microlitter A3.2

This work was possible due to support from

- HELCOM expert Group on Marine Litter (EG Marine Litter)
- State Agency for the Environment, Nature Conservation and Geology, Mecklenburg-Vorpommern
Schleswig-Holstein State Agency for Coastal Protection, National Park and Marine Conservation
State Office for Agriculture, Environment and Rural Areas, Schleswig Holstein





Outputs

- [HELCOM guidelines on monitoring of microlitter in seabed sediments](#) in the Baltic Sea. HELCOM (2022)
- [HELCOM guidelines on monitoring of microlitter in the water column](#) in the Baltic Sea. HELCOM (2022)
- Polt, L., Ruiz, M., Wolf, J., Fischer, E.K.: HELCOM BLUES case study: Microplastic concentrations in marine bottom sediments of the German Baltic Sea. MICRO 2022, Online Atlas Edition: Plastic Pollution from MACRO to nano, Online. <https://doi.org/10.5281/zenodo.7217338>





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Thank you!!



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