



Baltic Marine Environment Protection Commission

Technical workshop of the HELCOM BLUES microlitter group
(Activity 3.2) on best strategies in microlitter monitoring

Online, 30 June 2021

HELCOM BLUES WS 3.2-2021

Outcome of the Technical workshop of the HELCOM BLUES microlitter group (Activity 3.2) on best strategies in microlitter monitoring (HELCOM BLUES WS 3.2-2021)

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Introduction

The Technical Workshop of the HELCOM BLUES microlitter group (Activity 3.2) on best strategies in microlitter monitoring was held online on 30 June 2021.

The Workshop, of a technical nature, aimed at presenting the compiled results of the method survey conducted in the frame of the project and initiate discussion on sampling conditions and techniques in microlitter monitoring.

The Workshop was welcomed by Marta Ruiz, Associate Professional Secretary.

Elke Fischer, lead of A3 in HELCOM BLUES and member of EN-Marine Litter, and Ieva Putna-Nīmane, part of the A3 team in HELCOM BLUES and member of EN-Marine litter, acted as moderators of the Workshop. Marta Ruiz, Associate Professional Secretary, acted as secretary of the Workshop.

At the start of the Workshop, a tour de table of introductions was conducted. The list of participants is included in **Annex 1**.

The HELCOM BLUES project

The Workshop took note of the overall introduction of HELCOM BLUES project and its dedicated task to marine litter as presented by the Secretariat (**Presentation 1**).

Introduction to the method survey

The Workshop took note of the different monitoring strategies and recommendations in the frame of HELCOM, OSPAR and the EU MSFD, as well as the compilation on reported methods as presented by UHAM-CEN (**Presentation 2, slides 1 to 6**).

The Workshop took note that most of the data available nationally are part of research programmes. Only a few countries have started monitoring in the frame of national monitoring programmes, which may be due to the lack of monitoring harmonisation.

The Workshop took note that the aim of A3 HELCOM BLUES is not to provide a very detailed monitoring methodology but one that would allow for the subsequent comparison of analysed data.

The Workshop took note that within the frame of A3 HELCOM BLUES, another workshop will be held next year to discuss pending issues in relation to the monitoring protocol. Further information will be provided in due course.

Summary of the results of the method survey on seabed sediments

The Workshop took note of the results of the method survey on seabed sediments as presented by UHAM-CEN (**Presentation 2, slides 7 to 17**).

Summary of the results of the method survey in the surface column

The Workshop took note of the results of the method survey in the water column as presented by LIAE (**Presentation 3**).

The Workshop took note of the clarification that the recovery test when conducting water column sampling with manta trawls is conducted in the laboratory, not in the field.

Initial discussion on harmonized protocols: sampling (time, frequency, locations, techniques)

The Workshop supported the following views in relation to the sampling strategy for seabed sediments:

- number of stations: should allow for all subregions to be represented as well as for conducting trend analysis. In alignment with Commission Decision (EU) 2017/848 monitoring stations should also represent point-sources, if possible. More data is needed to make a final decision to evaluate whether the sampling effort currently conducted is needed or can be reduced. However, it is recognised that the acquisition of data may not be possible for all countries. The best strategy to conduct a Power analysis in the Baltic Sea would be to first identify a representative number of stations, but unfortunately there are no resources allocated for that purpose within the project;
- classification of stations: sampling for seabed sediments is generally coupled to contaminants monitoring which is conducted in open coastal waters in main basins. In some cases, additional stations are located in lagoon areas, river outflow areas or waste water treatment plants to identify different anthropogenic pressures. Bearing in mind that Art. 8 of the EU MSFD is being under review, it may be relevant to suggest the exclusion of point-sources from the monitoring strategy. National experiences indicate that data are very heterogenous and therefore it is difficult to make a classification of stations so that they are representative at the subregional level. It is proposed to use the stations and vocabulary currently available in ICES and try to link these stations to sources and pressures;
- replicates per station: the number of replicates should be considered in conjunction with the sampling method used. There are ongoing studies which will enable to compare the representativity of the results from sediments extracted with core samplers versus grabs, but the results are not available yet. The HELCOM COMBINE manual specifies that 3-5 grab samples are taken and combined in 1 sample for subsequent analyses. National experiences indicate that grab sampling enables an integration of the sample that would potentially lead to a more integrated sample.

The Workshop supported the following views in relation to the sampling strategy for the surface water:

- sampling methodology: environmental conditions as well as the presence of organic material deeply affect sampling with manta trawl. Thus, instructions on how to appropriately conduct sampling with manta trawls should be developed. It is to point out national experiences where manta trawls could not be used in open areas due to weather conditions, and plankton nets (300µm) had been applied. Also, in those cases where it was possible to use them despite the weather conditions, it was pointed out that sampling may not be reliable since the manta jumped due to the waves. Therefore, this data can just be used as proxy. The use of pumping sampling was pointed out as an alternative, bearing in mind that it has being used for sampling of smaller particles and that this methodology may not be feasible for all countries. Results from the FanLESStic-sea may be available on this regard later this year. Another alternative applied may be the use of ferry boxes;
- number of stations: the same approach proposed for sediments could be valid for water samples. There is a publication by [Maes et al., 2017](#) indicating that future monitoring programmes for microplastics at the sea surface in coastal waters of North West Europe should have a minimum of 200 stations to estimate the mean with a precision of 40% of its value. This assumption could be used to identify station amount for Baltic Sea;
- replicates per station: it is supported to use manta trawl without replicates. Experiences indicate that sampling with 100 µm mess size manta trawls in absence of algal bloom was not possible due to clogging of the manta trawl, which was not the case when using 300 µm mess size. There is a need to further agree on a minimum and maximum volume of water to filter.

The Workshop took note of the following initiatives and relevant publications:

- there is an on-going Swedish project which will gather national data and in cooperation with ICES DOME to develop the microlitter ICES DOME database;

- [Goldstein et al.](#), 2013 conducted a Power analyses on surface water sampling with manta trawl and concluded that a sample size of n=240 would be required to obtain a 50% increase in microplastic detection, using a power of 80%;
- Publication on microplastics in Baltic zooplankton samples: “[No increase in marine microplastic concentration over the last three decades – A case study from the Baltic Sea](#)” (2018);
- Publication comparing manta trawl and in situ pump filtration: “[Comparison between manta trawl and in situ pump filtration methods, and guidance for visual identification of microplastics in surface waters](#)” (2020);
- Swedish publication comparing manta trawl and filtration systems: “[Provtagningsmetoder för mikroplast >300 µm i ytvatten: En jämförelsestudie mellan pump och trål](#)” (2018).
- Final conference of the [FanPLESStic-sea project](#) to be held on 30 November 2021 (additional information to be provided once available).

Final discussion & next step

The Workshop took note that the compiled data will be shared as soon as pending confirmation from two countries is received.

The Workshop supported the need for further discussion on the number of stations for sediment sampling and agreed to provide their views on the matter by **16 August 2021** to Elke Fischer (elke.fischer@uni-hamburg.de).

The Workshop took note that it is foreseen to make some test in the laboratory to consider the replicate issue for sediment sampling and that input on this matter to be provided to Elke Fischer is welcomed.

The Workshop supported submitting the outcome of this Workshop to the upcoming EU TG Litter workshop to foreseen to be held in November 2021.

The Workshop supported the need to continue discussing open issues in another workshop to be organised in the frame of A3 HELCOM BLUES (date tbc). Identified issues for further consideration are as follow:

- compilation of argumentation for the supported approaches in relation to number of stations, classification of stations and replicates;
- storing material and samples treatment;
- for surface water, identification of polymers, how to choose them and which to choose;
- comparison of the manta trawl and the plankton net sampling methodologies;
- the lower cut-off size, since it seems that most microplastics tend to concentrate in the smaller fraction size of the water sample;
- the lower cut-off size for sediment: 50 or 63µm (which derives from sediment granulometry). Finnish participants made a study reservation on this matter since the national agreed limit for the next monitoring period is >100 µm. Discussion should also consider whether the aim is to consider total amount of microplastics or composition as well;
- expression of microparticles in water samples (volume *versus* surface)

Closure of the Workshop

The draft outcome of the Workshop was prepared by the Secretariat and adopted via correspondence.

Annex 1 List of participants

Name	Organisation	E-mail
Moderator		
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