



HELCOM Guidelines for monitoring beach litter

1. Background

1.1 Introduction

Litter on the coastline is one of the most obvious signs of marine litter. Surveys of litter on the beach allow for a detailed evaluation of litter in terms of amounts and composition. Its strength lies in the provision of information on potential harm to marine biota and ecosystems as well as social harm (aesthetic value, economic costs, hazard to human health) and, to some extent, on sources of litter and the potential effectiveness of management and measures applied.

1.2 Purpose and aims

Monitoring of the number of litter items per 100 m beach segment provides information on the status both of spatial and temporal distribution of marine beach litter along the coast of the Baltic Sea area.

The aim is to provide spatiotemporal information for detection of short-term status and long-term trends and to ensure that the data is compatible for the HELCOM pre-core indicator 'Beach litter' (STATE & CONSERVATION 5-2016, [document 4J-27](#)).

2. Monitoring methods

2.1 Monitoring features

Surveys of litter at selected beaches are conducted to allow for a detailed evaluation of litter in terms of amounts and composition.

2.2 Time and area

Three sampling campaigns during the year have to be organised; preferably during the same survey periods used in other international established monitoring programmes. If it is possible, according to national climatological conditions, a fourth campaign is to be conducted during winter time. Information from this fourth campaign, when available, will be included separately in the assessment (i.e. different colours on map representations). The fourth campaign might have an effect on the results of the following spring sampling on those beaches where winter monitoring has been carried out, which needs further consideration by the HELCOM EN-Marine Litter.

Beach litter is to be monitored by all HELCOM Contracting Parties, covering all coastal areas of the Baltic Sea. Detailed information related to national monitoring is contained in the '[Monitoring concepts table](#)' of the sub-programme 'Macrolitter characteristics and abundance/volume' of the HELCOM Monitoring Manual.

2.4 Monitoring procedure

2.4.1 Monitoring strategy

Surveys of litter stranded on the coastline or deliberately left by people on beaches and shores are a primary tool for detection of litter in the marine environment and have been used world-wide to quantify and describe the composition of marine litter pollution. These surveys allow for a detailed evaluation of litter in terms of amounts and composition. Their strength lies in the provision of information on potential harm to marine biota and ecosystems as well as social harm (aesthetic value, economic costs, hazard to human health) and, to some extent, on sources of litter and the potential effectiveness of management and measures applied.

2.4.2 Sampling method(s) and equipment

Beaches to be sampled

It is recommended that at least one beach in the monitoring programme is not included in the regular cleaning process and is frequented by few visitors, preferably in rural areas. Beaches that are cleaned frequently in between the surveys should not be included in the monitoring programme, if possible. Furthermore, the monitoring of litter should never be performed directly after the cleaning of a beach, but as close as possible prior to its cleaning. Data collected from beaches cleaned more frequently than once per day may be relevant for further national considerations.

A description of the beaches to be sampled is to be provided, including information on distance from harbours and cities, usage intensity/number of visitors, date of the last cleaning and frequency of the cleaning process. Beaches are to be identified following the definitions contained in the table below with the understanding that not all four criteria (environment, accessibility, habitation, accommodation, and services and facilities) are to be fulfilled when a beach is to be assigned to one of the beach types, e.g. urban, semi-urban or remote/natural.

	ENVIRONMENT	ACCESSIBILITY	HABITATION, ACCOMMODATION	SERVICES AND FACILITIES
URBAN	Located in front of urban areas, with a wide range of well-established public services (shopping areas, business districts, etc.).	Accessible by both public and private transport.	Large population and large-scale residential and tourist accommodation.	Extensively developed range of services and facilities provided to beach users.
SEMI-URBAN	Located in the surroundings of the urban areas, adjacent to or within a small coastal town with small scale community services.	Accessible by both public and private transport.	Small residential populations and/or many beach users during the bathing season; presence of accommodation facilities (hotels, B&B, campsites).	A reduced range of services and facilities provided to beach users.
REMOTE/NATURAL	Remote and natural environment; preferably located away from small towns or villages; predominance of natural elements and absence of community services.	Accessible via private transport, boat or by walking; including those which are closed to the general public.	Absence of residential population, housing or tourist accommodations.	Absence of services and facilities provided to beach users.

Choosing a mix of urban, rural and semi-urban beaches will provide knowledge on different types of sources of litter. Litter on rural beaches is more likely to indicate sea based sources and the litter situation at sea (background values for litter pollution level) - since very little littering is expected from visitors. Urban and semi-urban beaches would more reflect the contribution of land-based activities on and nearby the beach.

In each case, the criteria described above, should be followed as closely as possible when choosing beaches to be sampled. However, the coordinators can use their expert judgement and experience of the coastal area and marine litter situation in their particular country when making the final selection of the beaches.

Sampling segment and area

The length of the segment of the coastline to be sampled should be 100 m with the possibility of conducting subsampling for cigarettes butts and snuff, paraffin, pellets, all visible fragments, as well as other items if needed. If such subsampling is conducted 10 m stretch is to be monitored (see MARLIN, 2013).

The width of the beach (from the waterline to back of the beach, e.g. the foot of dunes or high vegetation behind) is also to be reported. The area should preferably also include the highest waterline with litter deposited also under more extreme high water conditions.

2.4.3 Sample handling and analysis

Litter items, visible to the naked eye (lower size limit at about 0.5cm), are to be counted and recorded within the type of materials detailed in Table 1. The amount of litter per type of material in number of items is to be determined. 'Chemicals' and 'Food waste' may be added to the list of type of materials when further guidance is available.

Type of material	Code
Artificial polymer materials	Plastic
Rubber	Rubber
Cloth/textile	Textile
Paper/cardboard	Paper
Processed/worked wood	Wood
Metal	Metal
Glass/ceramics	Glass
Undefined	Undefined

Table 1 – Litter items are to be classified according to these type of materials.

Cigarette butts and snuff are to be recorded as artificial polymer materials.

Litter items should be identified using different coding list (the updated JRC 2013, OSPAR 2010 or MARLIN 2013). Further work on the compatibility of these lists is envisaged. As a result, it would be possible to identify specific litter items and their quantity.

Two or more fragments recognizable as pieces from the same broken item are counted as one item.

All litter items should be removed from the beach during the survey. The litter collected should be disposed of properly. Larger items that cannot be removed safely should be marked (with for example paint spray) so they are not counted again during the next survey.

2.5 Data analysis

Before data analysis, all data must be standardized to a 100m stretch of beach. This means that the results for sub-samples of beach (i.e. 10m) must be extrapolated and, with the results of surveys on more than 100m of beach, the average number of items for 100m should be calculated and used for analysis (i.e. number of items recorded on 300 m of beach should be divided by 3 to give the average number of items per 100m). Data should be analysed aiming at identifying the amount of litter per type of material and top beach litter items. An agreement on how to conduct such analysis at a regional level can be envisaged.

3. Data reporting and storage

Data should be stored by the Contracting Parties. An arrangement of data storage at a regional level can be envisaged.

4. Quality control

4.1 Quality control of methods

Contracting parties should follow the HELCOM monitoring guideline but minor deviations from this are acceptable if the method achieves comparable results. Validation of the adopted method needs to be performed nationally e.g. by taking part regularly at inter-comparison studies or proficiency testing schemes.

Quality assurance and quality control should be primarily targeted at education of the field teams to ensure that litter collection and characterization is consistent across surveys.

4.2 Quality control of data and reporting

As part of quality control following actions are recommended:

- using of data duly verified by experts for database import;
- (transnational) joint beach litter collections in terrain;
- (transnational) joint training sessions/workshops with practical, comparative work on specific beach litter items/samples;
- “calibration” based on defined test samples;
- comparative control collections directly after routine surveys; and
- cooperation with experts outside the HELCOM area.

5. Contacts and references

5.1 Contact persons

HELCOM Expert Network on Marine Litter ([EN-Marine Litter](#)).

5.2 References

JRC. 2013. Guidance on Monitoring of Marine Litter in European Seas.

MARLIN. 2013. Final report of Baltic marine litter project MARLIN - litter monitoring and raising awareness. Online 28.8.2017 <http://www.cbss.org/wp-content/uploads/2012/08/marlin-baltic-marine-litter-report.pdf>

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