

PROTOCOL FOR LITTER DATA COLLECTION DURING THE MEDITS TRAWL SURVEYS

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Abstract

This protocol aims to the standardization of the data collection procedure for litter deposited on the sea floor that is collected mainly during the International Bottom Trawl Surveys in the Mediterranean (MEDITS). Thirty four different typologies were identified including 9 main categories related to litter material and 25 sub-categories related to source and main litter findings. Information on litter composition is recorded in terms of total weight and number and weight by litter categories, in a specific form to be integrated with haul information. This procedure will enable the estimation of total and by categories litter abundance per km², by depth and geographic area, aiming to future recommendation depending on litter sources.

Keywords: Trawl surveys, Monitoring, North-Central Mediterranean, North-Eastern Mediterranean, North-Western Mediterranean

The manufactured litter lost or deliberately discarded into the sea is variable and represents a growing threat to marine ecosystems, fisheries and public safety [1]. The availability of Litter Monitoring Data and harmonized monitoring methodologies are considered of prime importance to assess marine litter spatio-temporal abundance, to identify its origin and achieve an equal level of Good Environmental Status (GES) across all European Seas through the implementation of Marine Strategy Framework Directive (MSFD) concerning Descriptor 10 : «Properties and quantities of marine litter do not cause harm to the coastal and marine environment». The MSFD GES Technical Subgroup on Marine Litter, established following to the Commission Decision 2010/477/EU, proposed the inclusion of litter monitoring during the coordinated MEDITS trawl surveys, which are conducted for demersal fish stock assessments on the continental shelf and upper slope in 20 Geographical Sub-Areas (GSA), as the best option to gather information on the amount and composition of litter on the Mediterranean Sea bottom [2]. The protocol prepared by the MEDITS Working Group for Litter is mainly based on the IFREMER protocol for the observation of macro-litter during Fisheries Surveys [3] but also on the suggestions of Marine Litter Technical Recommendations for the Implementation of MSFD Requirement [2], CEFAIS protocol for benthic litter recording [2], as well as the results of a relevant study in the Tyrrhenian Sea [4]. The proposed procedure concerns observations of macro-litter collected from the sea floor by fishing gears (trawl nets, drags, hand lines, e.t.c.) used during fisheries surveys, but not those of floating litter or non-fisheries surveys.

Definition of marine litter:

In the framework of the MSFD for the GES of the sea, marine litter consists of items that have been deliberately discarded, unintentionally lost, or transported by winds and rivers, into the sea and on beaches. It mainly consists of plastics, wood, metals, glass, rubber, clothing and paper. Land-based sources account for up to 80% of marine litter – these include tourism, sewage and illegal or poorly managed landfills. The main sea-based sources are shipping and fishing [5].

Procedure to collect litter data:

On board the vessel, the litter collected is weighted as total and split into the categories and sub-categories shown in Table 1. It is mandatory to record or estimate total weight, regardless the categories and subcategories, as well as number of items for each main category: It is facultative to register weight by categories and number of items by sub-category. Qualitative and quantitative data on the litter must be reported in a specific form on litter and be connected to data regarding the general characteristics of the haul (haul code, date, geographic coordinates, depth zone, e.t.c.) and the gear performance, allowing the estimation of the trawled surface for each haul and standardized indices of total and by categories litter abundance per km². A photograph of total litter separated from fish catch, labelled with main haul data, is recommended as it might be used to future analysis of litter composition by Image Analysis Tools. Organisms attached on litter might be also noted.

Tab. 1. Litter typology and codes

Main Categories	Sub-categories
L1 Plastic	L1a. Bags
	L1b. Bottles
	L1c. Food wrappers
	L1d. Sheets (table covers, e.t.c.)
	L1e. Hard plastic objects (crates, containers, tubes, lids, e.t.c.)
	L1f. Fishing nets
	L1g. Fishing lines
	L1h. Other fishing related (pots, floats, e.t.c)
	L1i. Ropes/strapping bands
L2 Rubber	L2a. Tyres
	L2b. Other (gloves, boots/shoes, oilskins e.t.c.)
	L3a. Beverage cans
	L3b. Other food cans/wrappers
L3 Metal	L3c. Middle size containers (of paint, oil, chemicals)
	L3d. Large metallic objects (barrels, pieces of machinery, electric appliances)
	L3e. Cables
	L3f. Fishing related (hooks, spears, e.t.c.)
	L4a. Bottles
L4 Glass / Ceramic	L4b. Pieces of glass
	L4c. Ceramic jars
	L4d. Large objects (specify)
	L4a. Clothing (clothes, shoes)
L5 Cloth (textil/ natural fibres	L4b. Large pieces (carpets, mattresses, e.t.c)
	L4c. Natural ropes
	L4d. Sanitaries (diapers, cotton buds, e.t.c.)
L6 Wood processed (palettes, crates, e.t.c.)	
L7 Paper and cardboard	
L8 Other (specify)	
L9 Unspecified	

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