

## Ow dear, where is my gear? Marine litter from aquaculture sources

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There are no global estimates of the amount of plastic waste generated by the aquaculture sector (FAO, 2017). 'Identifying the options to address key waste items from aquaculture activities which could contribute to marine litter' is a priority action at global level included in the G7 Action Plan on Marine Litter (2015). Nevertheless, the necessary knowledge base to take policy actions and effective measures is currently largely lacking. Therefore, the AQUA-LIT project (EU EASME-EMFF) carried out a comprehensive assessment of the available data and knowledge on aquaculture as a source of marine litter in the North, Baltic and Mediterranean Seas.

The AQUA-LIT assessment compiled an inventory of 65 different items of marine litter attributable to aquaculture, including ropes, nets, floats and buoys, collecting material, strapping material, tags, clothing and structure parts, of which almost three-quarters are partially or completely made of plastic. Nineteen items are unique to aquaculture (e.g. plastic mesh screens, mussel socks and "Tahitians"), and especially related to bivalve farming. Nevertheless, the current OSPAR and HELCOM databases only define four categories of aquaculture litter items. As a consequence, all other collected mariculture related litter items are categorised in other more general groups and not taken into account. One further subdivided European or international classification system is therefore mandatory.

The study revealed that 15% of seafloor debris, 11 % of sea surface debris, and 11 % of beach debris is derived from aquaculture activities in these regions. These numbers may be interpreted as the upper limit given the fact that several considered items are used in multiple offshore sectors.

Focusing on the North Sea region, the assessment revealed a strong variation in the composition of the collected aquaculture related debris between the Northern and Southern Greater North Sea. This is mainly due to the different types of aquaculture and the strong currents from the Atlantic Ocean, together with frequent westerly winds. For example, the aquaculture related litter on the Belgian, Dutch and German beaches are mainly derived from the 'Bouchot' mussel and oyster cultivations in Normandy, France, while debris from finfish facilities are primarily found in the Northern North Sea.

The global and European policy framework for the prevention and management of marine debris exists, but needs to be further translated into implemented tailor-made actions and measures depending on the source of marine debris. To gain inspiration and knowledge from experts, a North Sea workshop was organized with the aquaculture sector and stakeholders. Focus points include the differentiation between consumables (single use, short use) and durables (long use), and the better labelling of aquaculture gear and items, including quality standards. The sector also proposes a mass-balance system: paying for what you leave offshore, and/or being rewarded for (collected) waste you bring on land. A deposit system can work very effectively for large items, but is unfeasible for frequently lost small items. Taxes on small and cheap disposable plastic gear items makes them more expensive for farmers to use and lose. Following the idea of Extended Producers' Responsibility (EPR), measures and related incentives have to be extended to individual or group-specific obligations and measures (on a voluntary basis, with a code of conduct, with new legislation etc.). Also, decommissioning plans for aquaculture facilities, based on the life investment cycle of the materials and infrastructure

should be available. Concerning waste management, a waste collection point in all ports and harbours is seen as a crucial factor for the success of the implemented measures.

These ideas, solutions and measures will be included in the AQUA-LIT toolbox, which will act as a platform for providing regional available solutions and tools to innovators, farmers, and other actors along the chain. This will serve the implementation of solutions against marine littering from aquaculture activities. The toolbox will be accessible via an online platform and a mobile app and will become available by the termination of the project in 2020.

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