



SUMMARY

Each year millions of tons of waste are dumped into the world's oceans. Slowly but surely the seas are turning into underwater landfills. The root cause of the increased amounts of debris in our oceans is directly related to our modern life style, consumption and production patterns, as well as attitudes and behaviors concerning waste, recycling and littering. Marine litter is an emerging environmental threat to our seas. But in the Baltic Sea marine litter has not been considered a major problem. At the same time the amounts, trends and composition of marine litter has been unknown.

The aim of Baltic Marine Litter Project MARLIN was to increase the knowledge of marine litter in the Baltic Sea by introducing a harmonised monitoring method in combination with opinion building activities to raise awareness of marine litter among the public and policy makers. For the very first time a comprehensive and comparable picture of litter in the Baltic Sea is presented. 23 reference beaches in Sweden, Finland, Estonia and Latvia has been identified and monitored during two years (138 assessments). The amounts of litter range from 75,5 items/100 m at rural beaches to 236,6 items/100 m at urban beaches. Cigarette butts are counted separately and is the most common type of litter with 301,9 cigarette butts/100 m at urban beaches. Plastic accounts for 62% of the litter at urban beaches and 54% at rural beaches. The most common type of litter, except from cigarette butts, is unidentified pieces of plastic, meaning broken down products from larger plastic items or items that doesn't fit under any other category in the protocols used. Other common litter items found at the top 10 list are glass fragments, plastic bottle caps and lids, plastic bags, foamed plastic, food containers and candy wrappers.

Most of the litter is related to our modern take-away lifestyle and composed of plastic. Littering by beach visitors or litter ending up at beaches from nearby cities seems to be the most common source of marine litter. Operational targets aiming at raising awareness and a change in littering behavior is therefore of great importance. The results indicate that litter generated from sea-based sources such as shipping does not seem to end up on shores of the Baltic Sea to the same extent as for example in the North East Atlantic area (ie ropes, fishing gear etc). Since the Baltic Sea lacks strong surface currents and tidal water it might on the other hand be hot spots of sea-bed litter and future studies on benthic and pelagic marine litter is of great interest to fully understand the marine litter situation in the Baltic Sea.

Beach litter monitoring is the most cost-effective tool to understand marine litter and national funding is crucial for long-term monitoring. The monitoring should be harmonised in a regional Baltic Sea context and data shared across borders.

The main outcomes of MARLIN is the implementation of a monitoring method based on UNEP/IOC monitoring guidelines adapted for the Baltic Sea; a structure that involves local stakeholders in the actual monitoring; and an open database and quality control. In combination with opinion building activities MARLIN can provide a good starting point for future national and regional strategies for marine litter in the Baltic Sea such as the Marine Strategy Framework Directive and a HELCOM regional action plan that is supposed to be ready by 2015.