

國立臺灣海洋大學
海洋環境與生態研究所 專題討論#

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Title : Microplastic pollution in the surface waters of the Bohai Sea, China

題目: 中國渤海表層水的塑膠微粒汙染

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Abstract:

The ubiquitous presence and persistency of microplastics in aquatic environments is of particular concern because these pollutants represent an increasing threat to marine organisms and ecosystems. An identification of the patterns of microplastic distribution will help to understand the scale of their potential effect on the environment and on organisms. In this study, the occurrence and distribution of microplastics in the Bohai Sea are reported for the first time. We sampled floating microplastics at 11 stations in the Bohai Sea using a 330 μm trawling net in August 2016. The abundance, composition, size, shape and color of collected debris samples were analyzed after pretreatment. The average microplastic concentration was 0.33 ± 0.34 particles/ m^3 . Micro-Fourier transform infrared spectroscopy analysis showed that the main types of microplastics were polyethylene, polypropylene, and polystyrene. As the size of the plastics decreased, the percentage of polypropylene increased, whereas the percentages of polyethylene and polystyrene decreased. Plastic fragments, lines, and films accounted for most of the collected samples. Accumulation at some stations could be associated with transport and retention mechanisms that are linked to wind and the dynamics of the rim current, as well as different sources of the plastics.

摘要:

令人非常地關切在水生環境中遍地性和持久性的塑膠微粒，是由於這些汙染物對海洋生物構成了越來越大的威脅。鑑定出塑膠微粒分布模式將有助於了解其對環境及生物的潛在影響程度。在這項研究中首次報導了渤海中的塑膠微粒發生及分佈情形。2016年8月，我們使用330 μm 拖網在渤海11個站點對漂浮的塑膠微粒進行採集。預先處理後，再對碎片樣本進行豐富度、成分、大小、形狀和顏色進行分析。平均塑膠微粒濃度為 0.33 ± 0.34 particles/ m^3 。微傅里葉變換紅外光譜分析表明了塑膠微粒的主要類型是聚乙烯，聚丙烯和聚苯乙烯。隨著塑料尺寸的減小，聚丙烯的百分比增加，反而聚乙烯和聚苯乙烯的百分比減少。塑料碎片，線條和薄膜占了所收集樣品的大部分。一些測站中不同塑料的來源，其累積作用可能與風和海流的運輸和堆積機制有關。

References:

Weiwei Zhang, Shoufeng Zhang, Juying Wang, Yan Wang, Jingli Mu, Ping Wang, Xinzhen Lin, Deyi Ma. 2017. Microplastic pollution in the surface waters of the Bohai Sea, China. Environmental Pollution 231(2017) 541-548.