Impact of land use on the abundance and composition of beach litter

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Coastal litter is recognized as a multi-scale problem with ecological, economic and social dimensions. Studies addressing the effect of coastal litter in Turkey highlight its economic harm to the tourism industry. In order to reduce or avoid both economic and ecological damage caused by coastal litter on the one hand and to comply with the aim of the European Marine Strategy Framework Directive (MSFD) of reaching a good environmental status of the European Seas by 2020 on the other, it is crucial to obtain information on the current state and source of pollution by coastal litter. We propose a methodology in compliance with the MSFD which allows the implementation and analysis of beach surveys on a broader spatial scale. 100 m stretches of 13 beaches on the coast of the Turkish provinces Mersin, Hatay and Adana in the Cilician Basin were sampled for macro-litter in April 2014. The region is known for intense agricultural, industrial, fishing and domestic activities. The average litter density was 0.92 ± 0.36 items/m^2. According to the Clean-Coast-Index, three of the sampled beaches were clean or very clean, two were moderate and eight were found to be dirty or very dirty. To provide information for the establishment of regional management plans, both the source and the potential way of entrance to the coastal environment were assessed. Land use and land cover in the vicinity of the beaches were related to litter densities. Litter items resulting from rapid consumption and smoking made up more than half of the total litter collected, while agricultural, industrial, fishing and shipping activities together contributed with only 6 % to the total number of items. 0.5 % of all litter items were transboundary litter. With land-based daily routine activities being the major contributor to coastal litter in the study area, the implementation of awareness campaigns and environmental education programs is suggested to achieve a reduction of the pollution.