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Plastic routing through the Odaw catchment

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River catchments are important to consider when investigating the fate of plastics once introduced into the environment. However, plastic transport at the river catchment scale is rarely quantified. In this study, we present a catchment-scale field assessment of macroplastic litter in the Odaw (270 km^2). The catchment was sub-divided into non-urban riverine, urban riverine and urban tidal zones based on the urbanisation level and riverine transport across the catchment. The riverine (river and riverbank) and terrestrial environments at ten locations along the catchment were monitored on three days in December, 2021. Floating litter items in the river were monitored by visual counting. At the riverbank and terrestrial environments, litter items were sampled in a designated area (5 x 2 m^2) and categorised according to the River-OSPAR list (Schone-Rivieren, 2018). Results showed a high plastic flux (1125 items/h) in the urban riverine zone, which was higher by a factor of 16 and 2 to the plastic flux at the non-urban riverine and urban tidal zones, respectively. Terrestrial and riverbank plastic density was highest closest to the river mouth (urban tidal). The factor increase between the most upstream (non-urban riverine) and downstream (urban tidal) was larger for terrestrial than for riverbank. This shows the influence of urbanisation on the generation of mismanaged plastics in the catchment. Top three plastic polymer types observed in the catchment were PO soft, EPS and Multilayer. However, at each zone, the top three plastic polymer types varied with PO Soft as the most dominant at each zone. The highest abundance of PO soft, EPS and multilayer was found at the urban riverine (56%), urban tidal (31%) and non-urban riverine (24%) zones respectively. Our findings provide information on the spatial variation of plastic transport in the Odaw catchment and therefore can help create better strategies to manage the plastic pollution problem in this catchment. Future work will further explore the potential sources and temporal sink zones in the catchment.

Reference

Schone-Rivieren (2018). Handleiding voor monitoring, pp. 1–3.

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