

# River plumes as a control on microplastic entry into the food chain

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Plastics are frequently observed marine debris, and there is growing concern about microplastic ecotoxicity. Rivers are considered a major source of plastic marine debris. However, the relative importance of microplastics from different land-based sources is poorly understood. Frontal systems, due to their tendency to concentrate material (i.e. food), are often associated with elevated biological activity and may be in locations where microplastics enter the food chain. The researchers hypothesize that river flow conditions control microplastic abundances, distributions, and uptake in the marine environment.



The benefits of this research will include new knowledge on the roles of river plume fronts in microplastic fate and transport in the marine environment. As a result, the sources of microplastics in these plumes as well as the rates of ingestion by zooplankton will be better understood. Overall, this project will provide insight into potential mitigation strategies for microplastic pollution and entry into the marine food web.

This study will be performed in the New York Bight Apex and includes inputs from the Raritan River and the Hudson River, which drain the largest metropolitan area in the United States. Microplastic composition and concentration will be determined during low and high flow conditions in nearshore, coastal, and estuarine environments and will be compared to the profiles observed in land-based sources. Field studies will be performed to understand the encounter and feeding rates of microplastic by zooplankton.

