

Small microplastics contaminate the sediment of the Bagaduce River Estuary, Hancock County, Maine

Sediment from the Bagaduce River estuary Maine, was assessed for microplastic contamination (300µm – 1mm). Microplastic is contaminating the sediment of the Bagaduce River estuary. One hypothesis was that the plastic would be found in shallower, low energy, fine sediment depositional areas of the river. A bottom grab was used to obtain a sample of sediment from each of the five stations. Modified NOAA methods for extracting microplastic from sediment were used including sodium chloride density separation and wet peroxide oxidation. Microscope analyses of each sample were conducted to enumerate abundance of microplastic per station. Microplastic was found in every sample from every station. A significant difference in abundance of microplastic between the station closest to the town's waste water treatment facility outfall and the station furthest up river from the town was observed. The station closest to the effluent outfall upriver had the most microplastic while the station furthest from the outfall had the least. No correlation between depth of water and microplastic abundance was found. This research concluded with the theory that a possible source of the microplastic contamination in the sediment of the Bagaduce River is the Castine municipal waste water system.

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