

A spatial investigation of sedimentary microplastic in the Bagaduce River and its relationship with the Castine wastewater treatment facility

As microplastics have become more abundant in the environment over time, they have become of increasing concern because of their detrimental impacts on ecosystem health. Microplastics do not only pose a physical threat to organisms through ingestion, but also pose a chemical threat to ecosystems because they can contain harmful additives. Recent studies indicate that wastewater treatment plants (WWTPs) play an important role in releasing microplastics to the environment. This study's objective was to determine whether a relationship exists between sedimentary microplastic concentrations and their distance from the Castine WWTP. This was done by sampling sediment in the Bagaduce River at increasing distances from the WWTP discharge location and analyzing sediment samples for total # of microplastics. Results showed a relationship between distance from the outfall site and microplastic concentration. Statistical analysis also showed that there was no relationship between sediment type (mud or rocky) and microplastics concentration. Lastly, there was no relationship found between the # of particles/dry mass between all stations. This information will give us insight about potential areas in the coastal ocean that could be more susceptible to harmful impact. Further studies need to be conducted to better understand the fate of microplastics once inputted into the water column.

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