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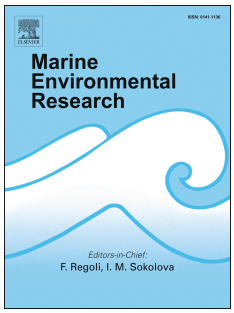

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ACCEPTED MANUSCRIPT

Indicators of nutrient pollution in Long Island, New York, estuarine environments

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Abstract

Roughly eight million people live on Long Island, including Brooklyn and Queens, and despite improvements in wastewater treatment, nearly all its coastal waterbodies are impaired by excessive nitrogen. We used nutrient stoichiometry and stable isotope ratios in estuarine biota and soils to identify water pollution hot spots and compare among potential indicators. We found strong gradients in $\delta^{15}N$ values, which were correlated with watershed land cover, population density, and wastewater discharges. Weaker correlations were found for $\delta^{13}C$ values and nutrient stoichiometric ratios. Structural equation modeling identified contrasts between

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