

Investigating the Influence of Tidal Distortion on Material Transport and Contaminated Sediment for Diadromous Fish Habitat in a Tidal River System

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2023-04-02

This dissertation aims to comprehensively examine the relationship between sediment transport dynamics and diadromous fish habitat in the Penobscot River, with a focus on understanding the potential implications of sediment contamination. The research objectives include investigating the impact of tidal non-linearities on material transport through field observations, developing a suite of models that quantifies the geographic range and location of spawning and juvenile diadromous fish habitat using habitat suitability indices, and considering the potential impacts of this transport phenomena when the sediment is contaminated for diadromous fish habitat using data analysis and habitat modeling. The significance of this project lies in its contribution to understanding the intricate interactions between sediment transport dynamics and diadromous fish habitat in this vital coastal ecosystem, informing conservation efforts and promoting the preservation of diadromous fish populations and their habitats, and safeguarding the health and resilience of the Penobscot River ecosystem.