

## Emma Poirier, Saint Mary's University

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**Title: Sediment Dynamics within a Hypertidal Salt Marsh and Tidal Creek System: Results from the Bay of Fundy**

**Research Advisor: Dr. Danika van Proosdij**

**Category: Marine Renewable Energy**

A resurgence of interest in tidal power development has raised the question regarding the consequences of removing energy from the tidal environment, particularly far field changes in sedimentation. However the lack of empirical data within the intertidal zone has significantly limited the capacity for researchers to determine if any potential modelled changes are within the range of natural variability. The purpose of this honour's research was to measure flow velocity, suspended sediment concentration and deposition, including the amount transported and deposited in flocculated form; and compare the results within a tidal creek and adjacent salt marsh in the Upper Bay of Fundy. Flow velocity and suspended sediment concentration were measured with Acoustic Doppler Velocimeters co-located with OBS (marsh) and an Acoustic Doppler Current Profiler with an RBR (creek). Sediment deposition was measured with surface mounted sediment traps. Disaggregated grain size analysis was performed on the Coulter Multisizer<sup>tm</sup> 3 grain size spectra to determine the amount deposited in flocculated form. All data were collected during spring tides. Previous research has shown that spring tides result in more deposition than neap tides in this area; inundation time was a contributing factor to this and flocculation of sediments was anticipated to also be a contributor. There was more deposition in the creek than on the marsh, as the creek was inundated for longer. Flocculation did not have a clear pattern with distance from creek. Higher suspended sediment concentration available led to greater deposition, and lower velocities resulted in higher deposition. The results of this research will provide empirical data for sediment transport models currently being developed in the region to assess the potential effects of energy extraction due to tidal power.