



“Fishing for Innovation in the Natural Sciences”

Abstract: Dr. Gayle Zydlewski, University of Maine

Decreasing uncertainty concerning fish and marine hydrokinetic devices in tidally energetic regions

(Gayle Zydlewski, Haley Viehman, Garrett Staines, Haixue Shen, James McCleave)

Studies of a tidal-stream energy project in Cobscook Bay, in the north eastern-most bay of the United States, at the entrance to the Bay of Fundy, were initiated in 2009. Tidal energy devices under consideration are Ocean Renewable Power Company’s (ORPC) TidGen[®] and OCGen[®] systems. Initially our goal was to determine the ‘natural’ temporal variability in the vertical distribution and density of fishes in the region of interest. These baseline data enabled the detection of turbine deployment/construction effects. Additional studies have considered species and community assemblages in the region, as well as individual fish behavioural responses within 3 m and up to 200 m away from a tidal energy device. We will use a compilation of these data to estimate the likelihood that fish will encounter a tidal turbine installed at a defined height in the water column. Approaches at multiple spatial and temporal scales have been useful to decipher behaviours of fish in response to marine hydrokinetic (MHK) devices and will enable more focused methods for future assessments. Data collected to date have been used in an iterative fashion by regulatory agencies to formulate decisions concerning in-stream construction and deployment activities.