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Title: Listening in the Fast Lane: Detecting Harbour Porpoise Activity in the Minas Passage

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Category: Environment

In the Bay of Fundy and elsewhere, macro-tidal coastal waters with high current speeds are sites of interest for harnessing tidal energy. However, there is currently little understanding of the effects of tidal in-stream energy conversion (TISEC) devices (i.e. turbines) on the behavior of marine animals, in particular fish and marine mammals. The Fundy Ocean Research Center for Energy (FORCE), located in the Minas Passage, is testing turbines and addressing their impacts on the environment. Current research in the Minas Passage includes an examination of the presence and activity of marine mammals to address questions related to potential environmental impacts including risk of harm to marine mammals inhabiting the area. Of specific interest is potential disturbance to the Harbour porpoise (*Phocoena phocoena*), the most commonly occurring marine mammal species in the Minas Passage. We are using passive acoustic monitoring devices (C-PODS) to detect click trains (and thus activity) of these highly vocal animals. Three units were positioned in the FORCE test area from August to November 2010 and from May to August 2011. The goal of this study was to characterize the spatial (between site) and temporal (day/night, seasonal) baseline activity of Harbour porpoises as well as porpoise activity associated with average water column speed (up to 4 m/s). Porpoises were present on all days (May-Nov), with peak activity in late June. Significant differences were detected between sites and there was significantly greater porpoise activity (based on detection of click trains) during the night than during the day. The C-PODS recorded significantly greater activity during ebbing tides than during flooding tides, with low levels of detection at high current velocities (>1.5 m/s). This effect may be due to porpoise behavior, detection limitations, including interference at high flows (i.e. high ambient noise), or both.