

**Abstract:**

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Tidal Talk: Detecting Harbour Porpoise (*Phocoena phocoena*) Click Trains in the Minas Passage

Tidal power development sites introduce potential risks to marine mammals. Our project focused on detecting the presence of *Phocoena phocoena* (Linnaeus, 1758), commonly known as harbour porpoise, at the Fundy Ocean Research Centre for Energy (FORCE) turbine test site in the Minas Passage. At FORCE, the maximum tidal range is 13 m and surface current speeds peak at 6 m/s. The study involved a comparison of the performance of two hydrophone types, the Chelonia Porpoise Detector (C-POD) and the icListenHF hydrophone (Ocean Sonics Ltd). Two C-PODs and one icListenHF were bottom moored and co-located in the FORCE test area during the full month of August 2012. Diel, tidal and lunar patterns in porpoise activity were examined. Detection positive minutes (DPMs, click train detection within a minute) were used to indicate porpoise presence. The icListenHF recorded approximately 10x more DPMs than the C-PODs, reflecting a listening volume for the icListenHF that is about 11x that of a C-POD. There were more DPMs at night than during the day, and more DPMs on neap tides than spring tides. Ambient noise levels, which were highest during a spring tide and higher during flood periods than during ebb periods, resulted in lost detection time. Near and at maximum current speeds, the performance of both hydrophone types was affected by noise interference, presumably due to bedload transport, pseudonoise and noise generated by mooring components. This baseline study and a 2013-2014 winter/spring study will contribute to the “before turbine deployment” dataset for a marine mammal impact assessment at FORCE.