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Title: Assessment of Bottom Substrate and Associated Epifauna at the FORCE Tidal Energy Demonstration Area
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The crown lease area of the Fundy Ocean Research Centre for Energy (FORCE), along the north shore of the Minas Passage, has a tidal range of up to 12 m and current speeds up to 6 m/s. It is characterized by a glacially influenced sedimentary basin, interspersed with volcanic bedrock subject to considerable scouring. This study examines the seafloor and benthic habitat of the FORCE lease area and describes features on which tidal energy infrastructure will be installed. The study presents baseline data that will be useful in addressing potential environmental effects of demonstrating tidal energy technologies (e.g. turbines, moorings). The benthic community of three berth areas and their associated cable routes was examined via qualitative and quantitative analyses of videographic material collected in 2008-2009 by Envirosphere Consultants Ltd. ImageJ photo software was used to analyze 1197 frames for geophysical features (substrate type, size) and abundance (or percent cover) of macrobiota. Relationships between biota and substrate type were examined. Although biodiversity in this high flow environment was low, the percent cover of *Halichondria panicea*, the yellow breadcrumb sponge, was often high and positively correlated with degree of exposed bedrock. Other taxa present, but in low numbers, include two species of seastar, white sponge, and anemones. Macroalgae featured prominently in the shallow regions (<10m) of the cable routes. The biological and physical features of the seafloor were mapped to better inform FORCE and tidal energy project developers about the characteristics of their berths. This study provides mesoscale baseline data for use in the determination of environmental impacts on and of subsea cables and mooring structures.