

Allen, A., 2014. Cetacean Conservation in the Age of Oil and Gas: Minimizing Acoustic Disturbance to the Northern Bottlenose Whale (*Hyperoodon ampullatus*) through Spatio-temporal Mitigation [graduate project]. Halifax, NS: Dalhousie University.

## ABSTRACT

Offshore oil and gas exploration activities are becoming increasingly common within Canadian waters. As cetacean species rely on sound for a variety of critical life functions, it is poorly understood how sound generated from such activities may impact those exposed to the sound source. The Scotian Shelf population of northern bottlenose whale (*Hyperoodon ampullatus*) is of particular concern when considering acoustic disturbance generated from potential seismic exploration activities. Specifically, the recently issued NS14-1 Call for Bids contains parcels that overlap directly with habitat that is critical to the species' survival. Should seismic exploration take place within the issued parcels, the extent to which this endangered species may be affected is unknown. To manage the issue at hand, the author examines the commitments of the Canadian Government to protect the country's biodiversity as set out in federal legislation, as well as the minimum standards specified in The Statement of Canadian Practice with respect to the Mitigation of Seismic Sound in the Marine Environment (SOCP). Among the many legislative loopholes present throughout federal laws and regulations, Canada's commitments to protect all listed species and their habitat (SARA, 2002) and to take a precautionary approach in the face of uncertainty (Oceans Act, 1996) are prescriptive. Unfortunately, these commitments are not reflected in the scant minimum standards set out in the SOCP. It is thus proposed that additional mitigation measures be implemented to protect the northern bottlenose whale from seismic survey-generated acoustic disturbance. Upon reviewing three noteworthy sources that report received sound level thresholds above which acoustic disturbance to exposed individuals is predicted to occur, it is proposed that the most conservative of the thresholds be incorporated into enhanced spatio-temporal mitigation strategies. In particular, it is recommended that an acoustic buffer zone be implemented around the species' critical habitat so that sound levels within the habitat never exceed the most conservative thresholds said to cause acoustic disturbance.

Keywords: offshore oil and gas; seismic exploration; underwater acoustics; cetacean conservation; Canadian policy; northern bottlenose whale; spatio-temporal mitigation.