NOVA SCOTIA ENERGY
R&D CONFERENCE 2014
ENERGY FOR CHANGE

# "Environmental Innovation in the Offshore"

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## *Movements and residence of Nova Scotia's acoustically tagged blue sharks: preliminary results from the first year of the OERA sponsored tagging program*

With Deep Panuke E&T and R&D Fund support, Dalhousie University's Ocean Tracking Network (OTN) has initiated a program to track juvenile blue sharks (*Prionace glauca*) off the coast of Nova Scotia. For unknown reasons, Nova Scotia is a "hotspot" for immature juvenile blue sharks, and our research focuses on observing the sharks' complex segregation behavior, movements and survival off Nova Scotia waters. Scientific objectives for the project include implanting long-life (> 6 years) acoustic tags in 40 juvenile sharks (20 sharks per year), to provide long-term spatial resolution of shark movements and distribution, identifying trans-boundary (e.g., to the USA) migrations, documenting site-fidelity and ontogenetic changes in habitat use, and illustrating the species' response to a changing ocean. The project leverages on the existing state-of-the-art acoustic receiver arrays and autonomous marine vehicles maintained by the OTN, and through partnerships with Encana, ExxonMobil, and StatOil. This infrastructure is providing highly-valued new acoustic receiver coverage that serves this and other ongoing tracking projects. The work is also training >20 students each year in the handling tagging, and tracking of sharks.

In the first field season (summer 2013) we tagged 20 female juvenile blue sharks with VEMCO V16 (16mm) acoustic tags, all of which were detected multiple times after release. We have retrieved 4,212 detections from these animals, most from fixed receivers near Halifax but including from arrays from off Sable Island and from our autonomous vehicles. Many sharks remained close to their original point of tagging for extended periods after release, suggesting site fidelity. However, one animal moved to waters off Sable Island. Detections gradually decreased during the autumn, indicating the animals were moving elsewhere for the winter, although one individual was still present near the edge of the continental shelf off Halifax in January 2014. We hope to document overwinter movements through additional detections upon acoustic receivers operated from Labrador to Florida by OTN and its partners. These data are not yet available. Additional sharks will be tagged in summer 2014, and we will continue to track the 2013 cohort to see if they show site fidelity to the Halifax region and repeated sex segregation. These studies will inform fisheries managers and policy makers as they implement the recently formulated Canadian Plan of Action for Shark Conservation.