

8th EGO Meeting and International Glider Workshop

May 21-23, 2019
Rutgers University, New Jersey

Presented by



Tracking marine animals and measuring their habitats using gliders

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Abstract (Oral Presentation)

The Coastal Environmental Observation Technology and Research (CEOTR) glider group, funded by the Ocean Tracking Network (OTN), the Ocean Frontier Institute (OFI) and Marine Environmental Observation, Prediction and Response (MEOPAR) Network of Centres of Excellence, primarily deploys Teledyne Webb Research Slocum Gliders and Liquid Robotics Wave Gliders along the Scotian shelf in the Northwest Atlantic and in the Gulf of St. Lawrence. Since 2011, our glider missions have supported several research and management projects, including quantifying spring bloom dynamics, monitored the acoustic presence and pelagic habitat of baleen whales, tracked tagged animals using acoustic telemetry and offloaded data from acoustic receivers mounted on the seafloor. The North Atlantic Right whale (NARW) is a critically endangered species that visits feeding grounds in the Gulf of Saint Lawrence and the Scotian shelf each year. Since 2014 we have developed a glider program to study the timing and persistence of whales in these feeding grounds, improve real-time monitoring, and support conservation efforts to reduce ship strike and fishing gear entanglement. The snow crab fishery off of Northeast Nova Scotia is a lucrative industry, worth more than \$130 million in 2017. To understand the movement of these crabs for fisheries management and also potential impacts on crab movement from a recently deployed high-voltage transmission line, crabs were tagged with acoustic transmitters and tracked via Oral bottom-mounted receivers and a Wave Glider. The Wave Glider was highly successful in monitoring tagged snow crabs, accounting for ~66% of all detections. Glider missions aimed at capturing episodic events require careful mission planning and piloting to ensure success. This presentation will focus on the plans and strategies used in our recent work monitoring and mapping the habitat of the NAWR using Slocum Gliders equipped with hydrophones and echosounders, and tracking of tagged snow crabs using a Wave Glider equipped with acoustic receivers.