

Early results from long-range acoustic geolocation by miniature environmental tags

Matt Sprague¹, Melissa Omand¹, Godi Fischer¹, Erran Sousa¹, Thomas Rossby¹, Simon Thorrold²
& Kelton McMahon¹

¹*University of Rhode Island*

²*Woods Hole Oceanographic Institution*

Understanding the movement, migrations, and behavior of commercially important marine animals is critical for effective conservation and management. GPS-equipped tags enable spatial tracking of marine mammals that surface regularly, but are limited in utility for tracking fish and invertebrates that rarely come to the surface. The RAFOS Ocean Acoustic Monitoring (ROAM) tag is a miniature archival tag, 5 cm in length, that contains a receiving hydrophone, temperature and pressure sensors. In combination with low-frequency, narrow-band sound sources, ROAM tags can be used to geolocate animals (or autonomous platforms) that spend most, or all, of their life sub-surface. Here we will present early results from the Ocean Twilight Zone Observation Network describing our efforts using a glider deployment and acoustic propagation modeling in the vicinity of two RAFOS sound-source moorings located in the western North Atlantic to test the accuracy of geo-location estimates from the ROAM tags. Future experimental designs for tracking lobsters or salmon in shallow water, and swordfish, tuna, and MINION floats in the open ocean will be discussed.