Quantifying sea turtle behavior using accelerometers

For decades, loggerhead sea turtles have been brought into captivity following a medical emergency and then released following mild to extreme rehabilitation and surgical treatments. However, there is little data about how effective these medical procedures are long-term, and what, if any, effects are on the turtle’s lifestyle once the turtle has been released. In order to better understand a sea turtle's behavior post release, new technology such as accelerometers can be placed on the carapace of the turtle to track their behavior. Accelerometers in particular are quite useful for identifying specific behaviors. Accelerometers are electromechanical devices that are used to measure acceleration and/or position by detecting motion along the x, y, and z axes. This provides information about the animal’s position, orientation, and direction of movement. Before using accelerometers to identify specific behaviors in the field; however, the patterns observed in the x, y and z axes for a certain behavior must be determined in a controlled lab setting by comparing the accelerometer data to the observed behaviors. We aim to use accelerometers to effectively quantify the behaviors of juvenile loggerhead sea turtles (Caretta caretta) in a lab, with the goal of eventually using accelerometers to check the behaviors of sea turtles released post-rehabilitation. Preliminary analyses have found patterns in the accelerometer data that correspond with specific behaviors. Currently, there are very few studies on sea turtle behavior post release that use accelerometers. This study seeks to provide tools for future researchers and for aquatic animal health specialists.