Woods Hole Oceanographic Institution

Biology Department Seminar

Thursday, October 12, 2023 – 12:00 Noon

Uncovering the Physiological and Fitness Consequences of Offshore Windfarm Construction on the Abundant Sea Scallop

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The global shift towards green energy has led to substantial investments in offshore wind (OSW) power generation. OSW installations have traditionally been located on shallow sandy substrates on continental shelves, and these regions also support productive marine bivalve species, including the giant sea scallop (*Placopecten magellanicus*). As OSW development involves the installation of massive steel supports through pile driving, which generates one of the loudest man-made sounds in the ocean, concerns have arisen regarding potential impacts on the scallop population. Reports from fisheries have suggested direct and indirect scallop mortalities near OSW construction sites, but establishing causal links between noise and mortalities has proven challenging due to a lack of field data for marine bivalves. To address this need, I conducted a controlled field-based study assessing physiological responses and anti-predation performance during real pile driving activity. Pile driving continually induced valve angle reductions and valve adductions across seconds to hourly time scales, and this led to decrease oxygen levels near the gills and a heightened metabolic rate. These physiological changes resulted in weaker swimming performance, a key anti-predator behavior. As offshore wind farm construction accelerates globally, this field-based study underscores the urgent need to assess its impact on marine bivalves, especially the giant sea scallop, which supports a significant fishery in the US.

HYBRID! **In person**: Redfield Auditorium **Zoom:** https://whoi-edu.zoom.us/j/91539080728 Meeting ID: 915 3908 0728 **By phone**: Find your local number: https://whoi-edu.zoom.us/u/aAqvRdGr8