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Department of Marine Sciences Presents a Seminar by

Shannon Meseck

NOAA/NMFS Milford

New England bivalve species response to ocean acidification: A physiological response

Worldwide, coastal waters are experiencing unprecedented rates of ocean acidification. End-of-century projections are raising concerns about many economically important fisheries, particularly bivalve fisheries. In the Mid-Atlantic and New England regions, carbonate chemistry data reveal horizontal and vertical gradients and seasonal gradients, with the northern Gulf of Maine region characterized by lower *in situ* pH, aragonite saturation state (ΩAR), and buffering capacity relative to the southern Mid-Atlantic (North Carolina) Bight Region. Sea surface temperature changes in the Mid-Atlantic and New England Regions are three times greater than other parts of the world, with annual increases ranging from 0.18-0.31°C from 1968-2018. In addition to increased sea surface temperatures, by 2100 primary production is projected to decrease by 2-16% in surface waters, and 7-18% in deeper waters. Rapid changes in carbonate chemistry, temperature, and primary production may affect marine bivalves located in our coastal zone. In New England and the Mid-Atlantic Bight, several bivalves (Atlantic sea scallops, Atlantic surfclams, Eastern oysters, Northern and Ocean quahogs, and bay scallops) provide important ecosystem services while supporting economically valuable fisheries that collectively account for 86% of the value of all marine bivalves harvested in the United States (valued at $852.8 million US dollars). Understanding the capacity of bivalve populations to respond to OA, and their ability to adapt to future environments, is critical for assessing the biological resilience of these ecologically and economically important species. The physiological response of the Eastern oyster, the Atlantic surfclam, Atlantic sea scallops, and Bay scallops under ocean acidification is being investigated at the NOAA Milford Laboratory. Dynamic energy budget models are being used to foresee how a species may be effected by future ocean conditions. Results from these studies will be presented to highlight the importance of linking physiological experiments with models to understand how bivalve growth and reproduction may change in the future.

Host: Catherine Matassa
Time & Date: 11:00 am, Friday, September 30, 2022
Place: Lowell Weicker Building, Seminar Room 103 (or WebEx)

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