

QUANTITATIVE MODELS FOR ECOSYSTEM ASSESSMENT IN NARRAGANSETT BAY: RESPONSE TO NUTRIENT LOADING AND OTHER STRESSORS

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Multiple drivers, including nutrient loading and climate change, affect the Narragansett Bay ecosystem. Managers are interested in understanding the timing and magnitude of these effects, as well as ecosystem responses to restoration actions, such as the capacity and potential for restoring biology (e.g., shellfish) to ameliorate nutrient loads. Quantitative modeling is underway to predict system response to these future scenarios – we are investigating the feasibility of using linked hydrodynamic models, water quality models, and ecological models for the estuary. Current challenges include the linkage of physical and chemical models in time and space, the representation of stressor effects for different species, and the integration of models with available data sets. Selected model outputs, related to shellfish, finfish, and beaches, will be used as input for economic valuation approaches. The project is designed to assess the feasibility of using modeling to support decision-making in the context of integrated nutrient management in southern New England, with a goal of transferability to other estuaries.