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Oyster Reef Restoration and Aquaculture Impacts on Denitrification and the Benthic Community

Human impacts have greatly altered coastal ecosystems through a variety of processes including nutrient enrichment and overfishing. The negative consequences of these actions are well known and include increased macroalgae blooms, low oxygen conditions, and losses of biodiversity. Oyster restoration and oyster aquaculture are two possible mechanisms that might combat these changes. Specifically, oysters are thought to be 'hot spots' for reducing biologically reactive nitrogen (N) concentrations through denitrification (the microbial conversion of nitrate to dinitrogen gas). Additionally, oyster restoration and aquaculture may improve the abundance and diversity of nekton and benthic communities by increasing water clarity through filtration and enriching the sediments with pseudofeces. While oyster restoration is actively underway in many coastal systems along the Atlantic seaboard, the restoration methods for Narragansett Bay and Rhode Island coastal salt ponds continue to be developed. Our research is examining *in situ* rates of benthic denitrification as well as benthic invertebrate and fish diversity in four different environments in a coastal salt pond in Rhode Island. Specifically, we will report summer sediment oxygen demand and N_2 gas and inorganic nutrient fluxes across the sediment-water interface at the following sites: oyster reef restoration, rack and bag aquaculture, shell hash, and bare sediments. Additionally, we will compare these *in situ* rates with other reported in the literature for other temperate shallow ecosystems.