

# Diatom Community Composition: Comparison Study Between Fox Island and Graduate School of Oceanography Dock

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C-AIM is developing a Narragansett Bay (NB) Observatory site at the URI Graduate School of Oceanography (GSO) long-term plankton time series location at Fox Island. Other C-AIM investigators have autonomous sampling capability at the GSO dock, which has shore power. Our goal was to compare the composition of planktonic communities over time at these two sites. Our comparison focuses on diatom communities.

Diatoms are microscopic algae that are nutrient cyclers and are an important food source for zooplankton and shellfish in NB. Important diatom community composition has been documented for over the last 50 years at the Fox Island site using microscopic methods. We used DNA based barcoding methods to compare weekly diatom community composition at the Fox Island and GSO dock sites over the summer of 2018. In weekly sampling, water was collected at these two sites on the same day and filtered for phytoplankton biomass ( $> 5.0 \mu\text{m}$ ). DNA was extracted from the collected cells and diatom community composition was determined using diatom specific PCR primers that target the highly variable V4 region of the conserved eukaryotic 18s rRNA gene and high throughput sequencing on the Illumina MiSeq platform. Community composition was determined using the DADA2 pipeline. Comparisons of sequence similarity by site was conducted with Bray-Curtis analysis with NMDS scaling.

Preliminary analysis shows that sampling month is a more important driver of diatom community composition than sampling location. Detailed comparisons of diatom communities between paired sampling sites are ongoing. This information will be helpful for aiding the C-AIM community to understand the relationship between diatom communities at Fox Island and GSO dock.