

Annual Time-Series of *Pseudo-nitzschia* spp and Domoic Acid Production in Narragansett Bay, Rhode Island, USA

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Some strains of the diatom *Pseudo-nitzschia* produce the neurotoxin domoic acid (DA) which can bioaccumulate in shellfish. Toxic shellfish consumption has deleterious impacts on higher trophic levels, including mortality in marine animals and amnesic shellfish poisoning in humans. In 2016 and 2017, DA toxicity closed shellfish harvest in Narragansett Bay (NB), Rhode Island, USA. While *Pseudo-nitzschia* has been detected in NB for over 50 years, these were the first DA closures in RI, threatening local economies and potentially human health. It is unknown what instigated these recent toxic events in NB: whether a changing environmental factor altered the physiology of *Pseudo-nitzschia* strains present or new DA-producing strain(s) were introduced to the NB ecosystem.

In order to investigate, we conducted year-long sampling of NB from Sept. 2017 - 2018 at several sites, including the NB mouths and inner regions. DNA from biomass collected on filters (> 5.0 μm) was extracted and amplified using diatom-specific primers in order to track community composition. Cell-associated DA was quantified, with accompanying environmental metadata (e.g. nutrients, temperature, and salinity). Low DA concentrations were detected throughout, with the highest peaks in Sept. and Jun. at NB mouths. There is one *Pseudo-nitzschia* sequence dominant in the winter, and a higher diversity of sequences in the summer months.

This analysis will assist in identifying strains responsible for DA production in NB and help identify ecological factors that may correlate with elevated DA.