KARENIA BREVIS UTILIZATION OF DISSOLVED ORGANIC NITROGEN IN WASTEWATER AND STORMWATER POND EFFLUENT

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Karenia brevis, the toxic dinoflagellate responsible for Florida Red Tide, blooms almost annually along the southwest coast of Florida, imposing significant ecological and human health impacts. Researchers have identified 13 nutrient sources supporting these blooms, including nearshore anthropogenic inputs. The influence of dissolved organic nitrogen (DON) from stormwater and wastewater runoff on coastal *K. brevis* blooms is unknown. We examined the bioavailability to *K. brevis* DON from water samples sourced from three stormwater ponds along an age gradient and one municipal wastewater sample, all from Manatee County, Florida, in a 21-day bioassay experiment. Results demonstrate that *K. brevis* was able to utilize a wide variety of N based compounds within each treatment. Specific growth rates for each stormwater pond, SWP 34 (age 34 yrs.), SWP 18 (age 18 yrs.), and SWP 14 (age 14 yrs.) were 0.21 day^{-1}, 0.37 day^{-1}, and 0.39 day^{-1}, respectively, with the highest cell yield in the oldest pond. The municipal wastewater sample had the highest specific growth rate of 0.48 day^{-1} and the lowest biomass. Using Fourier-transform ion cyclotron resonance mass spectrometry (FT-ICR MS), we were able to catalogue the molecular composition of the DON pool and identify degradation patterns within specific compound classes. Results showed that *K. brevis* utilized a wide range of compounds in the bulk DON pool, including lipid, protein, and lignin-like compounds. These data confirm the potential for stormwater ponds and/or wastewater to contribute nutrients which can potentially fuel coastal *K. brevis* blooms.

PRESENTER BIO: Amanda Muni-Morgan is a PhD Interdisciplinary Ecology student whose research focuses on the impacts of urban nutrient inputs (i.e., stormwater runoff, municipal wastewater) on harmful algae blooms (HABs) in Tampa Bay, Florida. Amanda has over 3 years of experience researching HABs, including mitigation, bloom ecology, and taxonomic identification.