

PhD Dissertation
Department of Environmental Science and Policy
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Title: Linking biological and functional diversity of bacterioplankton communities with dynamic environmental conditions along the Potomac River Estuary

Dissertation Director: Dr. Jennifer Salerno

Committee: Dr. Lauren Krausfeldt, Dr. T. Reid Nelson, Dr. Gad Perry

ABSTRACT

Estuaries are microbially diverse and spatiotemporally heterogeneous in microbial abundance, metabolic activity, and community structure due to natural physical and chemical gradients. Despite their ecological significance, bacterioplankton are often overlooked in climate change models and research. There is a paucity of data on the biological and functional diversity of microorganisms present in the Potomac River. This work uses a combination of 16S rRNA amplicon and metagenomic sequencing to characterize bacterioplankton communities across three key environments: tidal freshwater embayments, a salinity gradient, and anoxic zones.