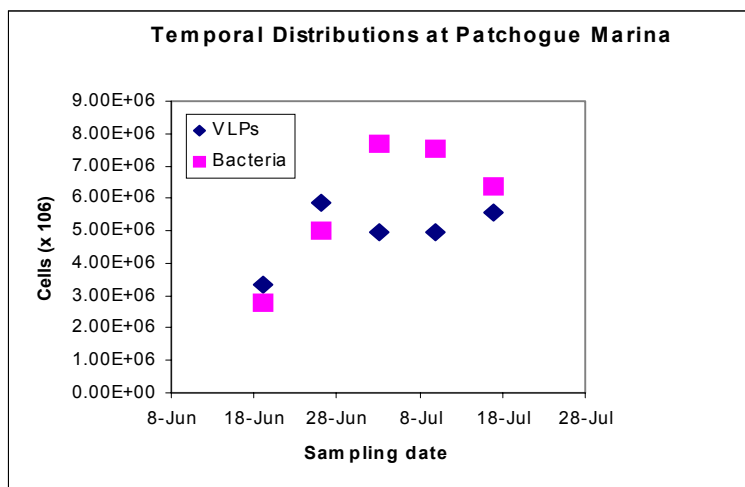


TEMPORAL PATTERNS OF VIRUSES ACROSS A SALINITY GRADIENT AND THEIR CORRELATION WITH BACTERIAL ABUNDANCES.

Elizabeth Kane, Josephine Aller, Ph. D, Paul Kemp, Ph. D, Megan Dantzer and Andrew Hellman, Department of Marine Sciences, State University of New York at Stony Brook

Bacterial populations in aquatic environments are influenced by a variety of factors including salinity and viral concentration¹. Over a six week period the dynamics of bacterial and VLP (virus-like particle) populations were examined in the Great South Bay, a shallow lagoon on the South Shore of Long Island. Four sampling stations were selected to cover a salinity range from fresh water (West Lake) to the open ocean (Davids Park Ocean) and included the Davids Park Bay and Patchogue Marina. A YSI multi-parameter SONDE was used to monitor salinity and temperature of the waters at the sampling stations. One liter of water was then collected using a 30 μ m filter for bacterial and viral analysis. For viral analysis the sample of water was fixed with a 2.5% final concentration of formalin and 2 mL of water was filtered through a .02 μ m Anodisc aluminum oxide membrane and backed by a 0.8 μ m polycarbonate membrane. The .02 μ m Anodisc membrane was stained using a 2.5X final concentration of SYBR Gold, a nucleic acid dye. The Anodisc membrane was placed on a glass slide with a drop of SlowFade. To enumerate the VLPs, epifluorescence microscopy and digital image analysis (MetaMorph Imaging System Version 4.5) were used and bacterial concentrations measured. Results show that salinity varied most at the Patchogue Marina ($18.5 \pm 3\%$) and the least at West Lake ($0.15 \pm 0.4\%$). Bacterial abundance was highest in the Davids Park Bay ($5.88E+06$) and lowest in West Lake ($9.37E+05$). VLPs were greatest in the Patchogue Marina and lowest in the Davids Park Ocean. Preliminary data analysis indicates that during the first two sampling dates for the Patchogue Marina, VLPs increased with increasing numbers of bacteria. During the third and fourth sampling dates the bacterial population peaked while the VLP population lagged behind. In the fifth sampling week the VLP population increased, possibly halting the rapidly expanding bacterial population. At this time further research is necessary to conclusively illustrate the impact VLPs have on bacterial abundance. This research was supported by a Simons Fellowship and by NSF OCE-0097



¹ Fuhrman, Jed A. Marine Viruses and their biogeochemical and ecological effects. Nature 399: 541-548