

## **Passport to Urban Oceanography- SUNY Maritime College**

June 29-July 10, 2015

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*Passport to Urban Oceanography* immersed twelve high school students from the Bronx, Manhattan, and Queens, NY in all aspects of the marine environment through classroom instruction, lab activities, and field sampling. The goal of the program was to engage students from primarily urban environments in exploring the marine environment beyond recreation, and foster excitement for scientific research.

The program took place from June 29-July 10 at SUNY Maritime College, which is situated on a peninsula where the East River meets the Long Island Sound. Located minutes away from New York City, the campus provides an ideal setting to study the many pressures facing urban coastal systems. One particular issue of concern is the increased prevalence of harmful algae blooms. Students focused on maintaining a long-term water quality monitoring station as part of the National Oceanic and Atmospheric Administration (NOAA) Plankton Monitoring Network, and on examining relationships between specific water quality parameters and the possible effects on algal blooms in local waters. With the help of Grants for Education in Microbial Science (GEMS), field sampling equipment including plankton nets, refractometers, and flow meters were purchased and used by the students to sample on-site surface waters daily. Additional measurements were made for temperature, pH, salinity, dissolved oxygen, and water clarity. Using microscopy, students learned to identify zooplankton and phytoplankton and how to distinguish harmful from benign algae. The students used these data to look for possible relationships between water quality parameters and phytoplankton composition. In addition, this work contributed to SUNY Maritime College's larger research effort studying the environmental variability of this unique ecosystem.

To better understand water quality and ecosystem variability, field sampling was augmented with laboratory activities. For example, the Center for Microbial Oceanography: Research and Education (C-MORE) microbial abundance lesson was used to introduce the idea of random sampling and the significance of microbes in the ocean. Other activities focused on ocean acidification, demonstrating the significance of ocean chemistry on marine organisms native to the sampling area. Lastly, students independently researched and gave oral presentations on topics related to harmful algae blooms and their ecological impacts as part of a mini symposium at the end of the two weeks.

*Passport to Urban Oceanography* was successful in introducing students to the scientific process; from both field and lab techniques to data analysis. Overall, the students gained a deeper understanding of the marine environment and their place in the urban ecosystem.

