

Aquatic health near wastewater discharge in Delaware Inland bays tidal canal: Monitoring chemical and microbiological contaminants

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As Delaware's coastal landscape continues to develop in a low-density and sprawling manner, the health of valuable natural resources, many of which sustain local economies, is increasingly at risk. Managing the demands for protecting critical habitat and managing water resources are a complex and continuously changing challenge in Delaware. Our primary objective is to assess the aquatic health of the Inland Bays through bacterial and water quality testing at a point source in this study. We have investigated relationship between environmental parameters with total bacteria and *Vibrio* population in water and eastern oysters (*Crassostrea virginica*). Oysters were placed in enclosed trays and submerged in the canal at four study sites. Physical and chemical water quality parameters were measured at all four sites, three of which are proximate to a municipal wastewater treatment plant discharge, and one control site away from the discharge. *Vibrio* was detected in canal water and in oysters via the COPP assay and *Vibrio* counts in the canal water were highest during August and September, while total bacteria counts were high virtually throughout the study period. *Vibrio* counts in oysters were erratic with a significant spike occurred in August after Hurricane Irene. Total bacteria and *Vibrio* overall were significantly more concentrated in oysters than in canal water. Preliminary results show similarities in the physical water properties and clear differences in the chemical properties of the effluent discharge and the receiving waters. Oyster growth and mortality rates are also examined to determine if the discharge has any effect on the growth and survival of oysters.

Biography

Dr. Ozbay is a Research Professor in the Department of Agriculture and Natural Resources in Delaware State University. Her research interests are in the area of habitat restoration and water quality issues, specifically water quality driven toxicity in harmful algae, shellfish-algae dynamics, nutrient and water quality management, aquatic ecology and bacterial monitoring. She received her PhD. in Fisheries and Allied Aquacultures at Auburn University, Auburn, Alabama in 2002. She conducted research leading to the development of aquaculture effluent water quality standards for the U.S. Environmental Protection Agency as her PhD. project. Dr. Ozbay has advised 15 graduate and 50 undergraduate students and has served other 15 graduate students' committees. She has received several outstanding researcher awards at the national, regional and institutional levels. She serves as an Editorial Board Member for the five different journals and former Executive Board Member for Atlantic Estuarine Research Society. She also serves in the Research Advisory Committee for NOAA-LMRCS, Technical Advisory Committee for the Northeast Aquaculture Center, currently as co-chair, and the Center for the Inland Bays.

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