

Efforts to mitigate climate change repercussions on oyster populations and natural oyster recruitment in Delaware inland bays

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Oyster restoration efforts are increasingly challenged by anthropogenic influences such as run-off, sea level rise, decreased salinity and pH, and other factors. Populations of Eastern oysters, *Crassostrea virginica*, along the Atlantic coast of US are only 1-3% of historic population levels and further declines would be catastrophic. Oysters are essential as a “keystone species” that provides habitat and spawning substrate, stabilization of sediments, and a natural filtration system to clarify waters. Depth and salinity greatly affect oyster populations and their associated fauna. They can tolerate a wide range of salinity, temperature, turbidity, and dissolved oxygen. Oysters occur where the annual temperature can range between -2 to 36°C. Large long-term populations are found at salinities between 5 and 40. In an attempt to enhance the oyster populations and improve water quality conditions in Delaware, an oyster gardening restoration program initiated. A variety of culturing techniques including subtidal modified rack and bag aquaculture, oyster cages, Taylor floats, and created oyster reefs have been used to investigate ecological and biological impacts of these efforts. Oyster survival looked promising, ranging from 100% to 74% survival. Natural recruitment of oysters have been observed on oysters in floats and nearby riprap, which may be a promising sign that oysters in the gardening program are reproducing within the Delaware Inland Bays. The timing and magnitude of deleterious effects of climate change on aquatic systems have yet to be determined. However, precautions to mitigate repercussions must be undertaken now if we are to have any hope of protecting this valuable natural resource.

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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