

**28th Annual
International Submerged Lands Management Conference Webinar Series**

Session Panelist Biographies and Abstracts

November 5, 2009

Wetlands Restoration: An Adaptation Strategy to Address Sea Level Rise

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Wetland ecosystems are an incredible natural resource providing flood control, buffers to storm surges, water quality and habitat benefits. The potential value of wetland systems to sequester carbon as an offset for other green house gases is just being explored. These complex systems are already being impacted by the effects of land use development and climate change. The goal of this session is to explore approaches being undertaken to protect and restore wetland systems in response to climate change and sea level rise. Panelists will address trends, risk, management strategies and complementary approaches to the restoration of wetland systems.

Panelists:

Dr. Danielle Kreeger, Partnership for the Delaware Estuary;
Mr. Steve Goldbeck, San Francisco Bay CDC
Dr. Bob Christian, East Carolina University
Dr. Paul Mankiewicz, The Gaia Institute

Danielle Kreeger DKreeger@delawareestuary.org

Danielle Kreeger is a functional ecologist with more than 25 years of experience as a research scientist. She is science director for the Partnership for the Delaware Estuary, where she represents the National Estuary Program's scientific interests. She leads science and technical advisory teams, performs research to address science and restoration knowledge gaps, and regularly organizes conferences and workshops to chart science, management and restoration needs in the Estuary. She also maintains appointments as associate research professor at Drexel University and senior research scientist with the Academy of Natural Sciences. Kreeger holds a PhD. from Oregon State University, a master's from the University of Delaware, and a bachelor's from Penn State University. Trained as a shellfish ecologist and wetland ecologist, she has authored more than 30 papers in peer-reviewed journals and edited a book on marsh ecology. Having worked in tidal and non-tidal ecosystems of the Pacific Northwest, Gulf of Mexico, Mid-Atlantic, and Europe, Kreeger currently works to identify broad ecosystem patterns and apply the lessons learned to regional and local decision-making to help address climate change and other ecosystem management challenges.

“Tidal Wetlands in the Delaware Estuary: Projected Effects of Salinity and Sea Level Rise and Potential Adaptation Strategies.”

Description: Coastal wetlands are a hallmark feature of the Delaware Estuary, a naturally turbid and highly productive ecosystem. Climate change and other system alterations increasingly threaten these functionally dominant habitats, however, and tidal marsh extent and condition appear to be in widespread decline. The attendant loss of ecosystem services (e.g., flood protection, fish and wildlife support, water quality maintenance) is therefore of increasing concern for resource managers. Projected increases in

salinity poses a threat to once abundant freshwater tidal wetlands; whereas, sea level rise is already impacting micro-tidal salt marshes. To manage for maximum sustainable wetland natural capital, the region's National Estuary Programs are working with the states and other partners to identify and implement a multi-tiered adaptation strategy through EPA-supported Climate Ready Estuaries pilot projects and rooted in a new coastal wetland monitoring and assessment program. Adaptation tactics at the watershed scale may include regional sediment and nutrient management, for example. Local adaptation is likely to include tactics to enhance vertical accretion, such as installation of living shorelines and application of sediment. Local adaptation should also include tactics to facilitate horizontal transgression into landward buffers, such as rolling conservation easements and other incentive-based land use conversion. Since resources will always be tight, adaptation investments must also be carefully prioritized and fairly consider areas of strategic retreat.

Dr. Robert (Bob) Christian is the Harriot College Distinguished Research Professor of Biology at East Carolina University. CHRISTIANR@ecu.edu

Bob is currently the President of the Estuarine Research Federation, and is one of the most highly respected marsh ecologists in the world. He's published roughly 35 papers since 2004 alone: a partial listing is provided at http://www.ecu.edu/cs-cas/biology/christian_robert.cfm.

His research is focused on coastal ecosystems, particularly salt marshes, estuaries and coastal lagoons along the Atlantic and Gulf coasts of the USA and in the Mediterranean. He's also involved in studies of low order and headwater streams within the coastal plain, especially regarding nutrient cycling and energy flow. He's interested in microbial communities and processes, but has also published papers on primary production of macrophytes, food webs, and ecosystem state changes. He's been active in promoting large-scale and long-scale studies in association with U.S. Long-term Ecological Research (LTER), International LTER programs, and the Coastal Module of the Global Terrestrial Observing System (GTOS), a program of the United Nations.