The common reed, *Phragmites australis*, has invaded many wetlands throughout North America.

Photo by Barbara A. Branca

New York Coastlines

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A DELICATE BALANCE

A fresh breeze makes the reeds sway gently on a balmy afternoon. They look harmless enough, even beautiful. Yet these invasive reeds, *Phragmites australis*, have been crowding out native species like cattails and cordgrass in wetlands all over North America, changing the delicate balance that makes wetlands productive nurseries that support diverse aquatic life.

According to **Drs. Eric Nelson** and **Bernd Blossey** of Cornell University, this invasive plant may be thriving because of its tolerance for microscopic pathogens that live below in the wetland mud. In a newly-funded NYSG research project, this research team will explore the relationships between *Phragmites australis* and soil pathogens. Their research results could provide key insights for developing breakthrough management strategies to curb the Phragmites invasion that threatens native plant and animal species and decrease its impact on wetland ecosystems.

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A DELICATE BALANCE

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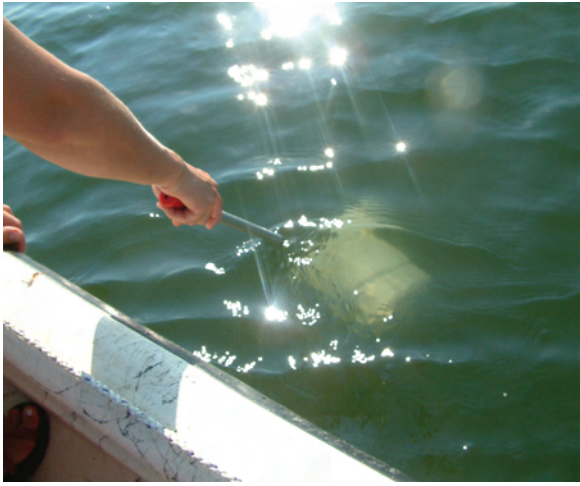

In a newly-funded project, researchers will examine the role sediments play in nitrogen dynamics in the Peconic Estuary. Photo by Barbara A. Branca

To address the complex relationships and help restore balance in our state's diverse aquatic and marine ecosystems, NYSG is funding 14 new research projects that will span the state. NYSG has awarded $1.32 million for the first year of these projects and committed an additional $970,858 for the second year. The projects include a cost share commitment of $1.35 million bringing their total project value to $3.64 million.

Along the Hudson River, great strides have been taken to improve water quality and restrict contaminants like PCBs. But within the sediment of the river bottom, worms ingest these decades-old persistent contaminants, become food for song birds, and potentially deliver to them a sub-lethal dose of PCBs. What results, say **Drs. Timothy DeVoogd** and **Andre Dhondt** of Cornell University, is that brain activity can change and ultimately alter a bird's song. In a newly funded project, this team will help to develop new methods of detecting dangerous, but non-lethal levels of PCBs in the environment.

During winter, snow and ice cover a frozen Lake Erie. But below the ice cover, microscopic organisms such as algae and bacteria may be very productive, forming so much biomass that there will be an abundance of dead and decaying organisms come summertime. Decay causes a loss of bottom oxygen which in turn causes a lack of finfish—but no shortage of disappointed summer fishermen. In a new project led by **Dr. Michael Twiss** of Clarkson University, researchers will use measurements of microorganism productivity in Lake Erie to create a predictive model for summertime hypoxia, a condition of low oxygen.

From the School of Marine and Atmospheric Sciences, Stony Brook University, the research team of **Drs. Robert Aller** and **Christopher Gobler** will examine the role of nitrogen in the sediments of the Peconic River estuary as it relates to nuisance algal blooms, oxygen depletion and the subsequent loss of marine life. A more complete understanding of the nitrogen cycle will help eastern Long Island municipalities in their efforts to control nitrogen loading and design more effective management plans.

These descriptions are just a sampling of two-year projects getting their start in 2009. Several critical research projects are continuing in directions pioneered by New York Sea Grant and its distinguished cadre of top-notch researchers, many of whom are international leaders in their fields. Cutting edge methods, such as genomics, will be used to probe more deeply into issues such as the viral hemorrhagic septicemia virus (VHVS) affecting Great Lakes fish, a new invasive shrimp forcing its way into freshwater food webs, the control of the *Listeria* pathogen in ready-to-eat smoked fish, hard clam immunity against the Quahog Parasite X pathogen, the slow recovery of populations of the Atlantic sturgeon, and the delicate balance of conditions that favor eelgrass meadows of Long Island.

Barbara A. Branca

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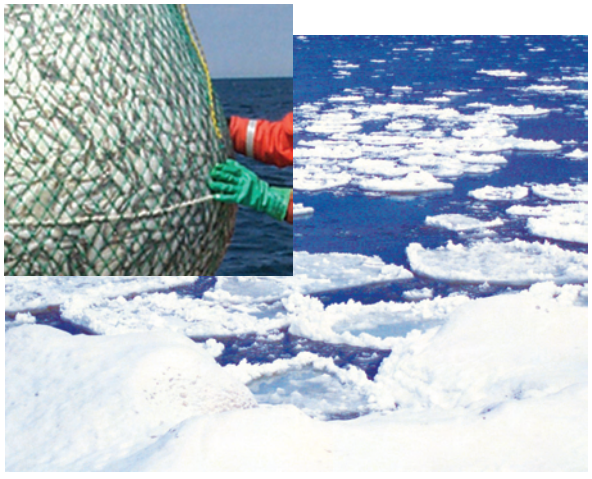
... for a listing of all of New York Sea Grant's newly funded projects



In the Great Lakes, alewives (top left) are important food for salmon and trout. *Dr. Randal Snyder* of Buffalo State is measuring alewife condition and growth so that managers can optimize salmonid stocking programs. Photo by USGS Lake Ontario Biological Station

Researchers will investigate how wintertime productivity in Lake Erie can predict summertime hypoxia. Lake Erie photo by Helen Domske