



News from the Great Lakes Research Consortium

Press Release: July 18, 2019

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Great Lakes Research Consortium Awards Funding to Five Projects

Syracuse, NY. The Great Lakes Research Consortium (GLRC) in partnership with the New York State Department of Environmental Conservation has announced \$121,916 in grants for five projects to be conducted by faculty and students at four State universities: The College at Brockport, the University at Buffalo, Stony Brook University and the College of Environmental Science and Forestry in Syracuse.

The five projects receiving the GLRC funding will advance the goals of the Great Lakes Action Agenda for New York State for the restoration and protection of freshwater resources locally and, in so doing, establish models for use nationally.

The projects are addressing the application of science to:

- increase shoreline resiliency,
- enhance wastewater treatment to reduce toxic substances,
- assess factors associated with methane gas release from wetlands,
- address the impact of climate change on the processes that influence beach and shoreline erosion, and
- investigate the potential of invasive species to transfer mercury to fish.

Project collaborators include the Town of Amherst, New York Sea Grant Great Lakes, the New York State Office of Parks, Recreation and Historic Preservation, and the Wayne County Soil and Water Conservation District.

Funding for the GLRC grants is provided through the New York State Department of Environmental Conservation from the New York State Environmental Protection Fund Ocean and Great Lakes Ecosystem Conservation Act program.

“We are excited about these projects that are exploring innovative approaches for applying science to critical issues facing the Great Lakes and the Great Lakes communities and economies. The results of these projects will not only benefit the Great Lakes region, but have implications for water bodies far beyond,” said Great Lakes Research Consortium Director Gregory L. Boyer, Ph.D.

The five grant projects receiving 2019 Great Lakes Research Consortium grants are:

- **The College at Brockport: \$25,000: Assessing the Effects of Cattail Treatment on Methane Emissions from Lake Ontario Coastal Wetlands.** The

project is addressing the question of how the eradication of invasive plants, e.g., cattails, influences freshwater wetlands release of methane, a potent greenhouse gas.

- **SUNY College of Environmental Science and Forestry, Syracuse, \$24,966: Food Web Impacts and Contaminant Transfer by the Tubenose Goby in the Lake Ontario-St. Lawrence River Basin.** This project is evaluating the habitat and diet preferences of an invasive species that is becoming more abundant in the northeastern Lake Ontario-St. Lawrence River basin and its potential to vector mercury contamination to higher-level fishes.
- **University at Buffalo, \$25,000: Towards Complete Removal of Per- and Polyfluoroalkyl Substances (PFAS) Using a Nanotechnology-Assisted Advanced Water Treatment Process.** This project is evaluating the efficacy of an innovative wastewater treatment approach using a nanomaterial-based reactive pretreatment followed by a biological wastewater treatment process to completely degrade per- and poly-fluoroalkyl compounds. PFAS are organic compounds extensively used in non-sticky consumer products and aqueous fire-fighting foams. The U.S. Environmental Protection Agency has identified PFAS as a priority pollutant for removal from drinking water and food sources.
- **Stony Brook University, \$25,000: Increasing Shoreline Erosion Resiliency Using Marine-Based Biopolymers.** This project, with a field demonstration site in Wayne County, is testing the use of ecosystem-friendly and cost-effective marine-based biopolymers as a potential technique for increasing shoreline erosion resistance, restoration and protection at the local and national levels.
- **Stony Brook University, \$21,590: Eastern Lake Erie Erosion, Sediment Transport and Depositions Under a Changing Climate.** This project is documenting the historical seasonal climate, wave climate, storm surge, beach erosion, and sediment movement along eastern Lake Erie as a basis for computer modeling to identify future impact for Lake Erie shores and beaches.

The Great Lake Research Consortium, housed at the SUNY College of Environmental Science and Forestry, Syracuse, NY, encompasses 18 colleges and universities in New York and affiliate campuses in Canada. For more information on each project and on GLRC grants for student research, student travel to conferences and workshops, and student internships, visit www.esf.edu/glrc.

MEDIA CONTACTS:

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MORE INFORMATION:

Awardee/Amount: The College at Brockport, Brockport, NY; \$25,000

Project Title: Assessing the Effects of Cattail Treatment on Methane Emissions from Lake Ontario Coastal Wetlands

Principal Investigator: Rachel Schultz, Ph.D., Associate Professor, Department of Environmental Science and Ecology, The College at Brockport

Collaborator: Michael Chislock, Ph.D., Assistant Professor, Department of Environmental Science and Ecology, The College at Brockport

Project Overview:

How does the eradication of invasive plants, e.g., cattails, influence the capacity of freshwater wetlands to sequester or release methane, a potent greenhouse gas? This project will use a new mobile technology to sample methane gas emissions from three restored marshes and a meadow marsh not invaded by cattails at the Braddock Bay Wildlife Management Area, located west of Rochester, N.Y. This research will also measure belowground environmental conditions to model methane fluxes over time and estimate carbon storage at each site.

Awardee/Amount: SUNY College of Environmental Science and Forestry,
Syracuse, NY; \$24,966

Project Title: Food Web Impacts and Contaminant Transfer by the Tubenose Goby (*Proterorhinus semilunaris*) in the Lake Ontario-St. Lawrence River Basin

Principal Investigator: Roxanne Razavi, Ph.D., Assistant Professor, Department of Environmental and Forest Biology, SUNY College of Environmental Science and Forestry

Collaborator:

John Farrell, Ph.D., Professor of Aquatic Sciences and Fisheries Science, Department of Environmental and Forest Biology, SUNY College of Environmental Science and Forestry and Director, Thousand Islands Biological Station, Clayton, NY

Project Overview:

It is unclear why the Tubenose Goby, a relative of the established invasive species, Round Goby, is increasing in abundance in the northeastern Lake Ontario-St. Lawrence River basin. This project will determine the diet and habitat preferences of both species, evaluate the importance of each species to the diets of predators, and assess each species for its potential to act as a vector of mercury to higher trophic level fishes.

Awardee/Amount: Stony Brook University, Stony Brook, NY; \$25,000

Project Title: Increasing Shoreline Erosion Resiliency using Marine-Based Biopolymers

Principal Investigator: Sherif L. Abdelaziz, Ph.D., Department of Civil Engineering, Stony Brook University

Collaborator: Lindsey Gerstenslager, District Manager, Wayne County Soil and Water Conservation District, Lyons, NY

Project Overview:

The Great Lakes shorelines, like most of the state and national shorelines, are experiencing increasingly high erosion rates, risking coastal ecosystems. With a focus on the Great Lakes, this project aims to develop a new “soft” technique to increase the erosion resistance, restoration and protection of shorelines nationally, using marine-based biopolymers that are ecosystem-friendly, cost-effective, and use existing soil mixing techniques to apply a biopolymer treatment. The project work includes a series of laboratory experiments followed by a field demonstration and full-scale performance monitoring over the different seasons at a site in

Wayne County, N.Y.

Awardee/Amount: **Stony Brook University, Stony Brook, NY; \$21,950**

Project Title: Eastern Lake Erie Shore Erosion, Sediment Transport and Depositions under a Changing Climate

Principal Investigator: Ali Farhadzadeh, Ph.D., Assistant Professor, Department of Civil Engineering, Stony Brook University

Collaborators (4): Henry J. Bokuniewicz, Ph.D, School of Marine and Atmospheric Sciences, Stony Brook University; Roy Widrig, Coastal Hazards and Processes Specialist, NY Sea Grant, Oswego, NY; and Eryn Iacovitti, Regional Environmental Analyst, and Ron Rausch, Director of Environmental Stewardship and Planning, NYS Parks, Recreation & Historic Preservation, Albany, NY

Project Overview:

This project will first document the historical trends of the Lake Erie seasonal climate, wave climate and storm surge as well as beach erosion and sediment movements on its eastern shore and then investigate scenarios of potential changes due to a changing climate, using computer modeling to quantify sediment transport and deposition processes following beach erosion. The objective is to create a signpost pointing toward future climate change consequences for Lake Erie shores and beaches, in general, and, initially, its eastern shores, in particular.

Awardee/Amount: **University at Buffalo, Buffalo, NY; \$25,000**

Project Title: Towards Complete Removal of Per- and Polyfluoroalkyl Substances (PFAS) Using a Nanotechnology-Assisted Advanced Wastewater Treatment Process

Principal Investigators (2): Nirupam Aich, Ph.D., Assistant Professor, Department of Civil, Structural and Environmental Engineering; and Ian M. Bradley, Assistant Professor, Department of Civil, Structural and Environmental Engineering

Collaborators (2): Diana S. Aga, Professor of Chemistry, University at Buffalo College of Arts and Sciences; and Don Willert, Town of Amherst Wastewater Treatment Plant

Project Overview:

Per- and poly-fluoroalkyl substances (PFAS) are organic compounds extensively used in non-sticky consumer products and aqueous fire-fighting foams that are highly toxic to living organisms including fish and humans. The U.S. Environmental Protection Agency has identified PFAS as a priority for removal from drinking water and food sources. Conventional wastewater treatment processes including biological degradation have not shown significant progress. This project aims to evaluate the efficacy of an innovative wastewater treatment approach using a nanomaterial-based reactive pretreatment followed by a biological wastewater treatment process to completely degrade PFAS compounds and their transformation products.

PHOTO OPTIONS are posted at www.esf.edu/glrc:

Stony Brook Project 1 of 2: Ali Farhadzadeh-008-1.jpg:

Dr. Ali Farhadzadeh leads the Great Lakes Research Consortium-funded project that is developing a basis for computer modeling to address Eastern Lake Erie erosion, sediment transport and depositions under a changing climate. Photo: University at Stony Brook

ESF Project: IMG_3190.jpg: ESF graduate student Iman Pakzad is assisting ESF Professor Roxanne Razavi, Ph.D., with the Great Lakes Research Consortium-funded project

investigating the potential for tubenose goby to act as a vector of mercury in the aquatic ecosystem. Photo: Jonathan White

Brockport Project: DSC_0593.jpg:

With a grant from the Great Lakes Research Consortium, Rachel Schultz, Ph.D, right, of The College at Brockport, and graduate student Courtney Scoles are assessing the effects of cattail treatment on methane emissions from Lake Ontario coastal wetlands. Photo: Jake Straub