



**Department of
Environmental
Conservation**

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Link to release and high res photos: www.esf.edu/glrc

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DEC & Great Lakes Research Consortium Award \$136,591 in Research Grants

Albany, NY. The Great Lakes Research Consortium, in cooperation with the New York State Department of Environmental Conservation Great Lakes Program, announces the award of \$136,591 for six research projects that address priority areas in the Great Lakes Action Agenda for New York State. Funding for the grants is provided by the state's Environmental Protection Fund (EPF) to the Great Lakes Research Consortium via an agreement with the College of Environmental Science and Forestry, Syracuse, NY.

“Our Great Lakes ecosystems are very complex, highly treasured and ever-changing,” said DEC Commissioner Basil Seggos. “It is imperative we continue to expand our scientific knowledge of these waters and evaluate what management actions are needed to sustain the unique quality of the Great Lakes, its watershed and its communities.”

“The 2017 Great Lakes Research Consortium grant awards represent critical projects that will advance the science-based understanding of the opportunities and challenges facing the Great Lakes system as a dynamic and essential resource supporting human, fishery, and wildlife populations,” said Great Lakes Research Consortium Executive Director Gregory L. Boyer, Ph.D., a chemistry and biochemistry professor at the College of Environmental Science and Forestry.

The 2017 small research grant awards are as follow; details of each project are posted on the Consortium website at www.esf.edu/glrc:

Assessing the Role of Nitrogen in Harmful Algal Blooms in the Great Lakes Basin (Honeoye Lake): \$25,000, Finger Lakes Institute at Hobart and William Smith Colleges, Geneva, NY; collaborator: Wright State University, Dayton, OH;

Economic Value of Controlling Aquatic Invasive Species in New York State: \$22,500, Clarkson University, Potsdam, NY;

Mercury Mobilization from Wetlands Along the Upper St. Lawrence River in Support of Ecosystem-Based Management: \$20,338.00, Clarkson University, Potsdam, NY; collaborators: St. Lawrence University, Canton, NY; New York Power Authority, Massena, NY; St. Lawrence River Institute of Environmental Sciences, Cornwall, ONT, CA;

Influence of Spawning and Nursery Habitat in Shaping the Northern Pike Gut Microbiome: \$22,500, SUNY College of Environmental Science and Forestry, Syracuse, NY; Thousand Islands Biological Station, Clayton, NY;

Informing Restoration of the Endangered Piping Plover to Lake Ontario: \$21,751.00, SUNY College of Environmental Science and Forestry, Syracuse, NY; collaborators: Audubon New York, Troy, NY; New York State Department of Environmental Conservation; New York State Parks, Recreation and Historic Preservation; Onondaga Audubon Society, Syracuse, NY; U.S. Fish and Wildlife Service.

Screening and Risk Assessment of Contaminants of Emerging Concern in the Onondaga Lake-Three Rivers System: \$24,502, Syracuse University, Syracuse, NY; collaborator: Upstate Freshwater Institute, Syracuse, NY.

The Great Lakes Small Grants Research Program is administered by the Great Lakes Research Consortium (GLRC) in cooperation with the DEC and New York Great Lakes Basin Advisory Council. The GLRC, based at SUNY ESF, is a consortium representing 18 colleges and universities in New York State plus nine affiliate campuses in Ontario, Canada. The goal of this small grant research program is to provide seed funding for new, cooperative projects that improve our understanding and management of New York's Great Lakes resources. EPF funding is allocated for the New York Ocean-Great Lakes Ecosystem Conservation Act and New York Great Lakes Action Agenda.

MORE INFO on EACH GRANT PROJECT:

Finger Lakes Institute: Assessing the Role of Nitrogen in Harmful Algal Blooms in the Great Lakes Basin (Honeoye Lake)

- . Honeoye Lake was selected as study site in part due to frequency and severity of its harmful algal bloom (HAB) events.
- . More than half of the 11 Finger Lakes experienced a HAB event in 2016.
- . The first presence of microcystin, a toxin produced by cyanobacteria that often dominates HABs, was reported in finished drinking water in NYS for water drawn from Owasco Lake in September 2016.
- . This GLRC-funded project addresses the role of nitrogen in promoting harmful algal blooms and will provide essential data for developing future models to predict HAB events and their toxicity. Lake Erie research has recently identified nitrogen as a key factor in controlling the toxicity of HABs.

Clarkson: Economic Value of Controlling Aquatic Invasive Species (AIS) in New York State

- . This GLRC-funded project will map AIS distribution in NYS and develop correlations between property values and appearance of AIS.
- . Researchers will use existing data and a cutting-edge econometric technique known as hedonic price function to measure economic impact, positive and negative, of the appearance of AIS on nearby property values. Earlier studies show property near lakes with Eurasian watermilfoil lost 13 percent in land value, while areas with zebra mussel infestations saw positive correlation.

- . According to the 2015 New York State Aquatic Invasive Species Management Plan, at least 154 non-native species cause about \$500 million in economic losses annually in NYS canals and the Hudson River system with 80 percent of that loss in commercial and sport fishing.

Clarkson University: Mercury Mobilization from Wetlands Along the Upper St. Lawrence River in Support of Ecosystem-Based Management

- . Plan 2014 water regulation will influence the reduction of wetland marshes that have acted as water purification systems, including sequestering mercury, since Moses-Saunders power dam construction in 1958. Project leaders estimate the proposed loss of 29 percent of current wetlands along the NY and Ontario shores of the Upper St. Lawrence River would release 74 metric tonnes of mercury.
- . With GLRC funding, an international research team will begin determining how much mercury will be released, how rapidly, and in what form in the Upper St. Lawrence River over two years.
- . This project takes a pre-emptive approach to address the risk of mercury release before St. Lawrence River fish become mercury-contaminated, impacting fish consumption guidelines.

SUNY ESF: Influence of Spawning and Nursery Habitat in Shaping the Northern Pike Gut Microbiome

- . Gut microbiome research science has provided indicators of how intestinal microbes influence the health of mice, rats, termites, chickens, and humans, yet has only modestly been explored in fisheries science.
- . With GLRC funding, researchers will examine fish gut microbiome as an indicator of spawning habitat and its impact on the health of Northern Pike, a fish native to the Great Lakes and St. Lawrence River, and a top sport fish in New York State.
- . NYS Department of Environmental Conservation studies have shown significant decline of adult and juvenile Northern Pike populations in the Upper St. Lawrence River. Some Northern Pike in the 1000 Islands region have modified their spawning behavior to occur later and in deeper off-shore bay habitats. Spawning in non-traditional habitats can decrease young fish survival.
- . As suitable spawning and nursery habitat decline so do fish numbers, causing the need to supplement natural populations with hatchery-bred fish. With this GLRC grant, researchers will create microhabitats in fish rearing facilities to investigate how that influences the gut microbiome and health of hatchery-raised pike.

SUNY ESF: Informing Restoration of the Endangered Piping Plover to Lake Ontario

- . An estimated 700-800 pairs of piping plovers nested in the Great Lakes region in the early 20th century. This beach-nesting species was completely extirpated from Lakes Erie and Ontario by the 1980s. Today, this bird is federally-protected by American and Canadian legislation and by state legislation in every U.S. state where it occurs.
- . An international effort is developing to support species recovery and conservation in the eastern Great Lakes using successful restoration efforts in the western Great Lakes as a model.
- . This GLRC-funded work will focus on Sandy Island Beach State Park and Sandy Pond, Oswego County, and at Lakeview Wildlife Management Area and El Dorado Beach, Jefferson County.
- . Because this species can lose nests to flooding events, but is also attracted to early-successional coastal habitat maintained by coastal overwash, the piping plover may serve as a sensitive indicator of beach ecosystem response to Plan 2014.

Syracuse University: Screening and Risk Assessment of Contaminants of Emerging Concern in the Onondaga Lake-Three Rivers System

- . There is a significant knowledge gap regarding the occurrence of contaminants of emerging concern, e.g., pharmaceuticals, personal care products, and current-use pesticides, in Onondaga Lake and the downstream river system.
- . This lake-river system, which includes Onondaga Lake and the Seneca, Oneida and Oswego rivers, serves as a prime site for this research because it receives high volumes of treated sewage from municipal wastewater treatment plants and is a major source of water to Lake Ontario.

- . With this GLRC grant, researchers will combine field sampling with high resolution mass spectrometry to establish CEC concentration patterns within the lake-river system.
- . With successful implementation, this project may enable the assessment of potential exotoxicological risks associated with CECs and contribute to the identification of future monitoring needs.