Buffalo State
Great Lakes Center
Since 1966

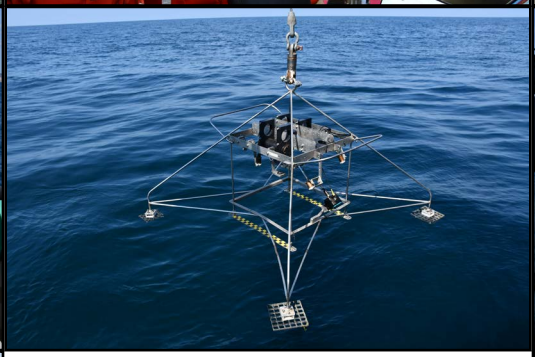
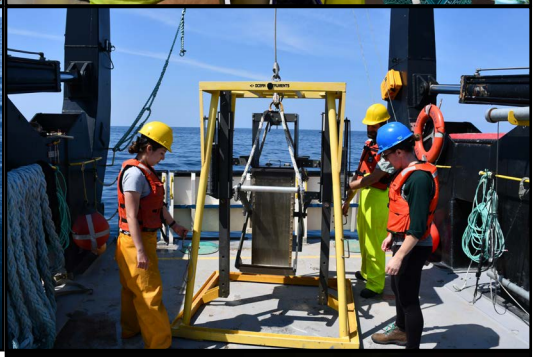
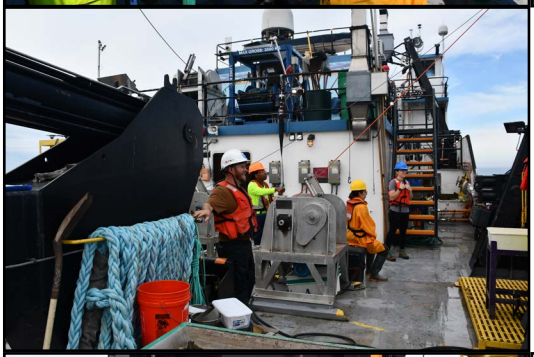
Annual Report 2025–2026



https://greatlakescenter.buffalostate.edu

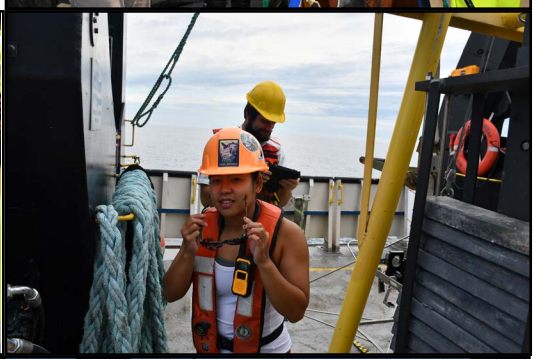
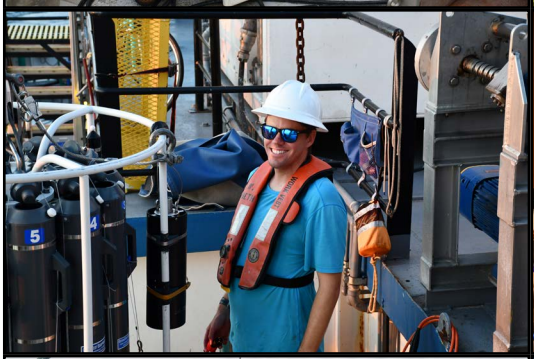




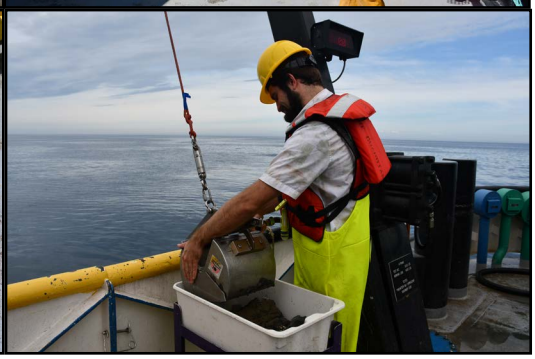




Lake Michigan CSMI

July 2025





CONTENTS

MISSION 3

HIGHLIGHTS 3

FROM THE DIRECTOR 4

I. STAFF 5

GLC Personnel 5
WNY PRISM Summer Employees 6
GLC Affiliates (at SUNY Buffalo State University) 6
Adjunct Research Scientists 7
Collaborators in New York State 7
Collaborators at other U.S. Institutions 7
International Collaborators 8

II. RESEARCH ACTIVITIES 9

Current Projects 9
Grants and Funding 14
Publications and Presentations 14

III. EDUCATION 18

Great Lakes Center M.S. and M.A. Graduate Programs 18
Advising Undergraduate and Graduate Students 18

IV. OUTREACH, SERVICE, AND PROFESSIONAL DEVELOPMENT 19

V. PARTNERSHIPS AND PROGRAMS 25

VI. WESTERN NEW YORK PRISM ACTIVITIES 26

Introduction 26
Program Highlights and Accomplishments 26
2025 Program Highlights 29
Additional Projects 30
Collaboration 31
WNY PRISM Steering Committee Members 31
Presentations, Workshops, and Trainings 31

MISSION

The Great Lakes Center (GLC) mission is to improve the quality of the environment by providing the best possible science to decision-makers concerned with the health and sustainability of resources, with a primary focus within the Great Lakes and their watersheds. This is accomplished through high quality research, informed and current graduate and undergraduate education, and dissemination of information to the public through outreach. Although the main focus of the research in the GLC concentrates on the Great Lakes basin, nation-wide and international projects are also considered of high priority as they expose GLC scientists to the cutting edge of modern science, facilitate collaboration, and greatly increase visibility of the Center's activity in the scientific community.

HIGHLIGHTS

- Over the last year our researchers published **10 peer-reviewed papers** and have **9 papers submitted** for publication.
- We presented **21 research talks** at national/international/regional conferences.
- We presented **22 talks** to local and regional groups.
- **Seven projects** for research and education are currently funded in the GLC totaling $8,109,671.
- **Nine students** were enrolled in Great Lakes Environmental Science M.A. and M.S. programs.
- **Two issues** of GLC newsletters were produced over the last year.
- **The Great Lakes Experience**, a year-long interdisciplinary program, was launched.



Brian Haas and Ben Szczygiel pulling ponar samples outside of Buffalo Harbor.


Dr. Chris Pennuto teaching the Aquatic Biology Class about seine nets.

FROM THE DIRECTOR

In August 2025, Dr. Alexander Karatayev retired as GLC Director after 18 years of service. He was the longest serving Director in the history of the Great Lakes Center. Over that time, he had 107 research papers published, presented 95 talks, and secured over $10 million in research funding. We applaud and recognize his service and accomplishments during his tenure. He will remain as a Senior Research Scientist with the GLC for what we hope will be years to come.

Moving forward, let us remember that research and research-informed education remain our priority in the GLC and it is necessary to seek extramural funding to support those activities. Like the Center itself, the availability of that funding, the level of competitiveness to win awards, the federal or state emphases for assistance, or the maximum allowable indirect rates have all transitioned over time and with changes in federal administrations. For example, in the early years of the Center, federal funding was near zero as financial resources were diverted to the Vietnam War effort, but the mid-70's saw significant funding opportunities as environmental regulations were enacted to overcome decades of unabated pollution. Today, another sharp curtailment of federal funding is at hand that will require some navigation.

As the Center matures in this, its 60th year, our traditions will remain, but some transitions will be needed; continuation of what we currently excel at (like invasive species research) coupled with strategic pivots and diversification of funding sources we approach and the workforce we bring to bear. Opportunities might be had in expansions of our biomonitoring expertise, some return to local and regional applied water quality investigations and building regional collaborations and partnerships for those investigations, encouraging cross-disciplinary activity with a broad sense of linkage to the Great Lakes watershed, reinvention of our role in leading environmental, aquatics-oriented education and training of undergraduate and graduate students, regional teachers, and natural resource professionals, capitalizing on our collective institutional strengths where it makes sense to do so, or leaning further into our lake monitoring technology. Thus, as we move beyond 60, we will be guided by our traditions and recognize our long history of transitions that have allowed us to meet the environmental challenges present throughout the Great Lakes and their watersheds.



The Field Station in June 2026 as seen by a drone from a member of the West Side Rowing Club. The GLC Field Station has been an aquatic research center for 60 years.

I. Staff

GLC Personnel

Director:	Christopher Pennuto (Interim)
Research Scientists:	Nikolai Barulin Lyubov Burlakova Susan Daniel (Biomonitoring Lab Manager) Alexander Karatayev
Research Support Staff:	Brian Haas (Station Manager/Scientist) Kit Hastings (Instructional & Research Support Specialist) Benjamin Szczygiel (Aquatic Research Specialist)
Biomonitoring Staff:	Kaira Kamke Angela Tulumello Brianne Tulumello
Administrative Assistant:	Susan Dickinson
WNY PRISM Coordinator:	Andrea Locke
WNY PRISM Program Managers:	Catherine Eaton, Terrestrial Program Manager Nicholas Farese, Aquatic Program Manager Rachel Taylor, Community Science & Engagement Manager
WNY PRISM Field Crew Leader:	Samantha Parelius
GLC Student Research Assistants:	Skyler Braeges, Graduate Student, SUNY Buffalo State University Nick Hahn, Graduate Student, SUNY Buffalo State University Sarah Klawinski, Undergraduate Student, SUNY Buffalo State University Kayla Kudlowitz, Undergraduate Student, SUNY Buffalo State University Yevheniia Mikulska, Undergraduate Student, University at Buffalo Lory C. Pierre, Undergraduate Student, SUNY Buffalo State University Isabella Russillo, Graduate Student, SUNY Buffalo State University Alexandria Ziolkowski, Undergraduate Student, SUNY Buffalo State University
GLC Student Interns:	Larkin Graham, SUNY ESSC Sustainability Intern Anisha Pokhrel, CAPE Summer Program

WNY PRISM Summer Employees

Invasive Species Management Assistants:

Brittnee Bukowski, SUNY Niagara (2025)
Isabelle Mahar, Columbia University (2026)
Winter Mumbach, University at Buffalo (2025)
Whitney Pierrot, SUNY Erie Community College (2026)
Manmeet Singh, University of Michigan (2025)
Charlotte Way, Northland College (2026)

Education and Outreach Assistants:

Nandini Agarwal, Ithaca College (2026)
Nikolai White Bear, University at Buffalo (2024 - 2025)

Lead Boat Stewards:

Catherine Alverson, Buffalo State University (2026)
Shane Trudeau, University at Buffalo (2026)
Chloe Van Nelson, University at Buffalo (2025)
Emily Yousey, SUNY Potsdam (2025)

Boat Steward/Environmental Educators:

- Cayla Burch, SUNY Morrisville (2025)
- Grace Camarata, Allegheny College (2025)
- Emma Dainty, Houghton University (2025)
- Riley Fields, University at Buffalo (2026)
- Caitlin Garrell, Niagara University (2025)
- Dylan Glascock, University of Lynchburg (2025)
- Teresa Gutierrez, SUNY Geneseo (2025)
- Marisa Michaels, Erie Community College (2025)
- Dennis Misko, Niagara University (2026)
- Gabriel Pellette, SUNY Buffalo State University (2026)
- Camryn Pielechowski, SUNY Buffalo State University (2026)
- Adam Shaffer, University of Findlay (2026)
- Mason Shultz, University of Albany (2025)
- Aiden Shurtz, University at Buffalo (2026)
- Ingrid Siudzinski, University of New Hampshire (2026)
- Colby Stoner, Utah State University (2025)
- Quinn Sullivan, SUNY Environmental Science & Forestry (2026)
- Mykayla Williams, SUNY Buffalo State University (2025)

GLC Affiliates (at SUNY Buffalo State University)

- Kelly Frothingham, Dean, School of Arts and Sciences
- Susan McCartney, Director, Small Business Development Center
- Olga Novikova, Assistant Professor, Biology Department
- Mary Perrelli, GIS Lab Supervisor, Geosciences
- Daniel L. Potts, Professor, Biology Department
- Randal Snyder, Professor, Biology Department
- Tao Tang, Professor, Geosciences
- Stephen Vermette, Professor, Geosciences
- Robert J. Warren II, Professor, Biology Department

Adjunct Research Scientists

- Richard Barbiero, Chicago, Illinois
- Thomas Hahn, Buffalo, New York
- Knut Mehler, Research Scientist, Helmholtz Centre for Polar and Marine Research, Alfred Wegener Institute, Germany

- Vadim Karatayev, Assistant Professor, University of Maryland, College Park, Maryland

Collaborators in New York State

- Connie Adams, NYS Department of Environmental Conservation
- Gregory Boyer, SUNY Environmental Science and Forestry, Syracuse
- Bhasker Das, Division of Drug and Biotherapeutic Discovery, University of Buffalo
- Nate Drag, NY Sea Grant, Buffalo, NY
- Mike Goehle, U.S. Fish and Wildlife Service
- Dmitry Gorsky, U.S. Fish and Wildlife Service
- Andrew Hannes, U.S. Army Corps of Engineers
- Isabel Porto Hannes, University at Buffalo
- Kristen Holeck, Cornell Biological Field Station, Cornell University
- David Matthews, Upstate Freshwater Institute, Syracuse, NY
- Jonathon O'Brien, Canisius University, Buffalo
- Dianna Padilla, Department of Ecology and Evolution, Stony Brook University
- Erin Redding, NYS Department of Environmental Conservation
- Lars Rudstam, College of Agriculture and Life Sciences, Department of Natural Resources, Cornell Biological Field Station, Cornell University
- James Watkins, Cornell Biological Field Station, Cornell University
- Brian Weidel, U.S. Geological Survey, Lake Ontario Biological Station, Oswego

Collaborators at other U.S. Institutions

- Theodore Angradi, U.S. EPA Mid-Continent Ecological Division, Duluth, Minnesota
- Jakob Boehler, National Center for Water Quality Research, Heidelberg University, Tiffin, Ohio
- David Bunnell, U.S. Geological Survey, Great Lakes Science Center, Ann Arbor, Michigan
- Paris Collingsworth, Illinois-Indiana Sea Grant and Department of Forestry and Natural Resources, Purdue University, West Lafayette, Indiana
- Peter Esselman, U.S. Geological Survey, Great Lakes Science Center, Ann Arbor, Michigan
- Elizabeth Hinchey Malloy, U.S. EPA Great Lakes National Program Office, Chicago, Illinois
- Joel Hoffman, U.S. EPA, National Health and Environmental Effects Research Laboratory, Mid-Continent Ecology Division, Duluth, Minnesota
- Leon Katona, U.S. Geological Survey, Upper Midwest Water Science Center, Lansing, Michigan
- Katya Kovalenko, Natural Resources Research Institute, University of Minnesota Duluth, Duluth, Minnesota
- Richard Kraus, U.S. Geological Survey, Lake Erie Biological Station, Huron, Ohio
- Barry Lesht, Department of Earth and Environmental Sciences, University of Illinois at Chicago; CSRA, Chicago, Illinois
- Julie Lietz, General Dynamics Information Technology, Duluth, Minnesota
- Charles Madenjian, U.S. Geological Survey, Great Lakes Science Center, Ann Arbor, Michigan
- Janet Nestlerode, U.S. EPA, National Health and Environmental Effects Research Laboratory, Gulf Ecology Division, Gulf Breeze, Florida
- Jessica Plavicki, Department of Pathology and Laboratory Medicine, Brown University, Providence, Rhode Island
- Euan Reavie, Natural Resources Research Institute, University of Minnesota Duluth, Duluth, Minnesota
- Brian Roth, Michigan State University, Kalamazoo, Michigan
- Mark Rowe, Great Lakes Environmental Research Laboratory, NOAA, Ann Arbor, Michigan
- Ed Rutherford, Great Lakes Environmental Research Laboratory, NOAA, Ann Arbor, Michigan
- Mike Sayers, Michigan Technological Research Institute, MTU, Ann Arbor, Michigan
- Anne Scofield, U.S. EPA Great Lakes National Program Office, Chicago, Illinois
- Robert Shuchman, Michigan Technological Research Institute, MTU, Ann Arbor, Michigan
- Anett Trebitz, U.S. EPA Office of Research & Development, Mid-Continent Ecology Division, Duluth, Minnesota

- Yvonne Vadeboncoeur, Department of Biological Sciences, Wright State University, Dayton, Ohio
- Jake Vander Zanden, Center for Limnology, University of Wisconsin-Madison, Madison, Wisconsin
- Daelyn Woolnough, Biology Department, Institute for Great Lakes Research, Central Michigan University, Mount Pleasant, Michigan
- David Zanatta, Biology Department, Institute for Great Lakes Research, Central Michigan University, Mount Pleasant, Michigan

International Collaborators

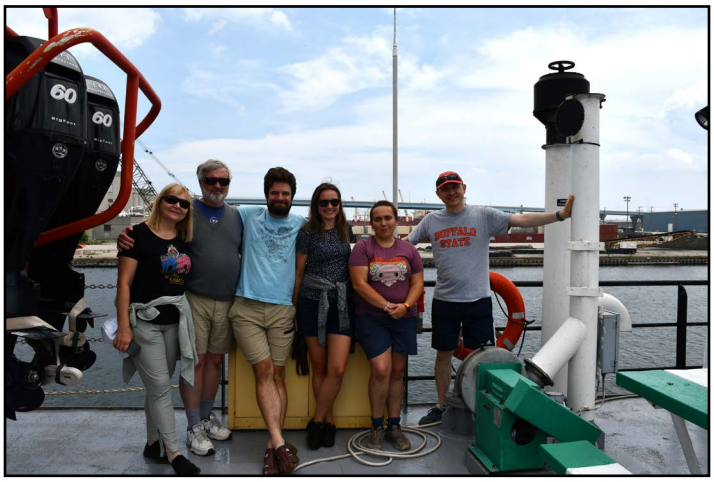
- Boris Adamovich, Research Laboratory of Aquatic Ecology, Belarusian State University, Minsk, Belarus
- Csilla Balogh, Balaton Limnological Research Institute, Hungary
- Yulia Bespalaja, Federal Center for Integrated Arctic Research, Russian Academy of Sciences, Arkhangelsk, Russia
- Ivan Bolotov, Federal Center for Integrated Arctic Research, Russian Academy of Sciences, Arkhangelsk, Russia
- Demetrio Boltovskoy, University of Buenos Aires, Argentina
- Frank Collas, Radboud University, Nijmegen, The Netherlands
- Nancy Correra, Sede Educativa Universitaria, UNDEF, Buenos Aires, Argentina
- Ronald Dermott, Alumnus, Fisheries and Oceans Canada, Burlington, Canada
- Maria Dittrich, University of Toronto Scarborough, Toronto, Ontario, Canada
- Elsa Froufe, CIIMAR - Interdisciplinary Centre of Marine and Environmental Research, and University of Porto, Porto, Portugal
- Jürgen Geist, TU München, Munich, Germany
- Ron Griffiths, Aquatic Ecostudies Limited, Canada
- Linda Haltiner, Kanton Luzern, Switzerland
- Jörg Huwyler, Department of Pharmaceutical Sciences, University of Basel, Switzerland
- Bastiaan Ibelings, University of Geneva, Geneva, Switzerland
- Benjamin Kraemer, University of Freiburg, Freiburg, Germany
- Manuel Lopes-Lima, CIBIO/InBIO - Research Center in Biodiversity and Genetic Resources, University of Porto, Portugal
- Frances Lucy, Institute of Technology Sligo, Sligo, Ireland
- Oleg Makarevich, Belarusian State University, Minsk, Belarus
- Tamara Makarevich, Belarusian State University, Minsk, Belarus
- Nicoletta Ricciardi, CNR-Institute of Water Research, Verbania Pallanza, Italy
- Zoltán Serfőző, Balaton Limnological Research Institute, Hungary
- Konstantin Shumskii, Department of Ichthyology and Aquaculture, Belarusian State Agricultural Academy, Belarus
- Ronaldo Sousa, CIIMAR and Minho University, Braga, Portugal
- Piet Spaak, Eawag, Dübendorf, Switzerland
- Maria Urbańska, Poznań University of Life Sciences, Poznań, Poland
- Ilya Vikhrev, Federal Center for Integrated Arctic Research, Northern (Arctic) Federal University, Arkhangelsk, Russia
- Alexandra Weber, Eawag, Dübendorf, Switzerland
- Alexandra Zieritz, University of Nottingham Malaysia Campus, Semenyih, Malaysia

II. Research Activities

Current Projects

Monitoring of benthic invertebrates in the Great Lakes

PIs Lyubov Burlakova and Alexander Karatayev. The GLC, in collaboration with Cornell University, was awarded U.S. EPA Great Lakes Long-term Biological Monitoring grants for 2012–2017, 2017–2022, and 2022–2028. The Great Lakes Monitoring Program by the EPA Great Lakes National Program Office includes both the annual collection of benthos (Buffalo State) and zooplankton (Cornell University) samples from 57 long-term stations, and a much more detailed survey conducted in each lake every 5 years within the Coordinated Science and Monitoring Initiative (CSMI). We participated in CSMI surveys in 2014 (Lake Erie), 2015 (Lake Michigan), 2016 (Lake Superior), 2017 (Lake Huron), 2018 (Lake Ontario), 2019 (Lake Erie), 2021 (Lake Michigan), 2022 (Lake Huron and Lake Superior), 2023 (Lake Ontario), 2024 (Lake Erie), and 2025 (Lake Michigan). The EPA Monitoring Program is designed to provide managers access to biological data on zooplankton and benthos to support decision-making. Additional research projects include the impact of dreissenids on the lower food web and the benthic nepheloid layer, as well as the development of remote sensing methods. We identified benthic samples collected aboard the EPA R/V *Lake Guardian* across all the Great Lakes during 2012–2024 and submitted the data to the Great Lakes National Program Office (GLNPO). These data form the basis for individual lake reports and the State of the Great Lakes report. Thus far, the results of the study have been published in over 35 papers and 15 reports, and presented at regional and international meetings.



The CSMI Michigan crew: Lyuba Burlakova, Sasha Karatayev, Vadim Karatayev, Kaira Kamke, Lauren Martinek, and Nik Barulin.

New method for rapid assessment of dreissenid mussels populations

PIs Alexander Karatayev and Lyubov Burlakova. The Great Lakes Center, in collaboration with the U.S. Environmental Protection Agency's Great Lakes Biology Monitoring Program and Office of Research and Development-Great Lakes Toxicology and Ecology Division, has developed a new method for rapid assessment of dreissenid mussel populations in lakes. The method uses a Benthic Imaging System (BIS) to estimate population size of these invaders in near-real time (during a typical 2-week summer cruise of the EPA research vessel *Lake Guardian*). The new method substantially reduces the time required to map dreissenid mussel distributions across large spatial scales compared with traditional sediment collection methods. This increase in spatial resolution and reporting times of monitoring is especially important considering that the quagga mussel is now one of the major drivers of ecosystem processes in the lower four Great Lakes. This method for *Dreissena* rapid assessment was applied in Lake Erie in 2019, Lake Michigan in 2021, Lake Huron in 2022, Lake Ontario in 2023, Lake Erie

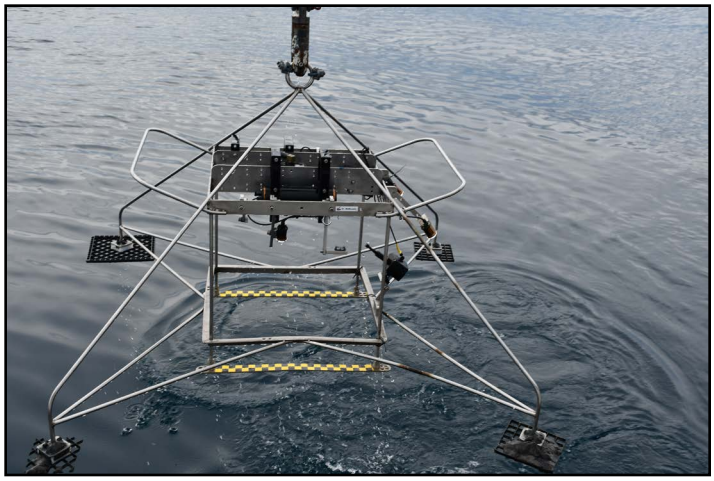


Research Scientist Nik Barulin processing benthic images to calculate dreissenid coverage and population size.

in 2024, and Lake Michigan in 2025, and will be used in future surveys as a valuable addition to conventional bottom-grab monitoring. The results of these studies have already been published in three papers and presented at multiple international meetings. This method is now used for quagga mussel monitoring in deep Swiss lakes Constance and Biel (Haltiner et al., 2022).

Benthoscapes

PIs Lyubov Burlakova and Alexander Karatayev. Images from side-looking BIS cameras used for rapid assessment of dreissenid populations during CSMI surveys are also used to assess spatial distribution of benthos and *Mysis*. Communities of benthic macroinvertebrates are among the most useful indicators for biological assessment of environmental and anthropogenic stressors, but both sample processing and species identification are time-intensive, often requiring several years to identify all samples from a large-scale survey. Mapping benthic landscape, or "benthoscape," structure and dynamics using underwater video can provide a valuable, cost-effective assessment of bottom habitats at large spatial scales with minimal habitat disturbance. In 2019, during the CSMI benthic survey in Lake Erie, we used this approach to characterize benthic habitats and then tested whether visual classification could serve as an indicator of hypoxia (Burlakova et al., 2023). We identified four habitat types that differed significantly in near-bottom dissolved oxygen concentration and confirmed that video analysis can provide a quick and reliable method to detect habitats affected by periodic hypoxia. Video identification of benthoscapes may be important for regional monitoring of over 20 hypoxic zones documented in the Great Lakes, where the extent and magnitude of hypoxia currently represent a major knowledge gap. We used this method to detect hypoxic habitats in 2022 on Saginaw Bay of Lake Huron, and in 2023 on Hamilton Bay of Lake Ontario. The results of this study have been recently published in *Ecological Indicators*.



The BIS returning from the depths of Lake Michigan.

This video method was recently used to detect another invasive species, *Hypania invalida*, a Ponto-Caspian tube-dwelling polychaete that has spread through European inland waterways and was recently detected in Lake Constance (Switzerland). Analyzing 5 years of video data, we found that the probability of occurrence declined significantly with increasing distance from the Rhine flow pathway and with depth, while year effects indicated significant temporal expansion (the manuscript is currently being prepared for submission). This research confirmed that video analysis is a quick and reliable technique for identifying new benthic invaders.

Benthos of the Laurentian Great Lakes: Inventory of lake-wide surveys

PIs Alexander Karatayev and Lyubov Burlakova. Over 110 lake-wide benthic surveys were conducted on the Laurentian Great Lakes since 1929. However, these studies are often not readily available and have never been combined into a single dataset to preserve historical data. According to our estimations, primary data for at least 20% of all surveys are incomplete or have already been lost. For over five years, the Great Lakes Center has been conducting an inventory of benthic surveys across all Great Lakes to create a database of available information on species composition, distribution, density, and biomass of benthic invertebrates. Considering the rarity of long-term benthic studies in lake ecosystems, this dataset could be useful to explore effects of different environmental factors and exotic species on community organization, for monitoring of water quality, biodiversity, exotic species introduction, fish food base assessment, and other ecosystem services provided by benthic communities. Our first complete dataset on the Lake Ontario benthic community includes taxonomic data to the species level for 11 of the surveys and data to the group level for another two surveys covering the last 54 years and was published as a data paper in *Ecology* (Burlakova et al., 2022). We also summarized 90 years of benthic research in Lake Erie (Karatayev et al., 2022; Burlakova et al., 2024), and 50 years of changes in the

benthic community of Lake Superior (Burlakova et al., 2026). The next paper summarizing over 70 years of data on Lake Huron is currently under review at the *Journal of Great Lakes Research*, and the data paper is in preparation for submission to *Ecology*.

"BODENSEE in STRESS - Modelling the consequences of climate change and invasive species for the Lake Constance ecosystem as a basis for integral management:" The impact of serial invasion of dreissenids on lake ecosystems

PIs Alexander Karatayev and Lyubov Burlakova. This is a large collaborative project involving over 15 scientists from multiple institutions in North America and Europe. Within this project we synthesized decadal time series across seven lake ecosystems to resolve shared changes in seven key ecosystem features following invasion by zebra mussels and subsequent invasion by quagga mussels. These two congeners are among the most widespread invasive species that re-engineer and increasingly co-invade freshwater ecosystems. Seven polymictic shallow lakes with long-term data sets revealed remarkably similar trends, with the strongest ecosystem impacts occurring within 5-10 years of zebra mussel invasion. Surprisingly, plankton communities then exhibited a partial, significant recovery. This recovery was absent, and impacts of initial invasion amplified, in four lakes where quagga mussels outcompeted zebra mussels and more completely depleted phytoplankton. In 2024 – 2026, within the "BODENSEE in STRESS" collaborative project (Swiss Federal Institute of Aquatic Science and Technology), we assembled high-resolution data sets spanning 18 North American and European invaded lakes and five key ecosystem variables and found that impacts manifest earlier in polymictic than in stratified lakes. Our results indicated that lake size is more important than other parameters in determining *Dreissena* impact. The paper "Larger lakes are hit harder and longer by *Dreissena* invasion" by Karatayev et al. is currently under review in *Biological Invasions*.

Spatial self-organization of *Dreissena* populations in the Great Lakes

Dreissenid mussels dominate benthic biomass in many areas of the Laurentian Great Lakes and substantially affect nutrient cycling, water clarity, habitat structure, and food web pathways. Although their distribution, density, and biomass have been extensively studied, little is known about the spatial organization of mussel beds and the environmental factors controlling colony formation and aggregation.

We are using long-term underwater video collected during the Great Lakes Biology Monitoring Program and Coordinated Science and Monitoring Initiative surveys to quantify the spatial structure of *Dreissena* populations in Lakes Erie, Michigan, Huron, and Ontario. Preliminary analyses of video data from Lakes Michigan and Ontario showed that *Dreissena* were strongly aggregated across large lake areas. The largest colonies occurred at intermediate depths, where mussel abundance was also highest. Abundance peaked at approximately 60 m in Lake Michigan and 52 m in Lake Ontario. Sites with very low near-bottom current velocities generally had smaller colonies. Comparison with hydrodynamic model outputs for Lake Michigan indicated that colony size and aggregation may be related to current velocity and bottom shear stress. These results suggest that moderate near-bottom currents may create favorable conditions for feeding and the formation of large mussel colonies.

We are expanding this analysis across lakes, basins, depths, and years by measuring patch size, colony structure, percent cover, and aggregation. These characteristics will be compared with substrate, *Dreissena* density and biomass, water quality, food availability, and hydrodynamic conditions. The study will determine how the spatial organization of *Dreissena* populations varies among Great Lakes with different productivity, hydrodynamics, and invasion histories. Incorporating spatial structure into underwater video analysis may improve assessments of *Dreissena* population status and provide a better understanding of mussel-driven habitat modification and long-term ecosystem change.

Zebra fish (*Danio rerio*) colony establishment

This project is led by research scientist Nikolai Barulin and Interim Director Pennuto. Zebra fish are a valuable vertebrate model for a wide range of investigations, from genetic to ecosystem. They have particularly common use in cellular biology and ecotoxicology. The project obtained its IACUC approval in spring 2026 and has

ironed out rearing, feeding, and mating protocols to build a sustainable supply of wild-type fish. This colony will allow GLC staff to expand collaborations with colleagues in the region.

Western New York Partnership for Regional Invasive Species Management (WNY PRISM)

The Western New York Partnership for Regional Invasive Species Management (WNY PRISM) works to address invasive species priorities using a coordinated partnership network for which the program provides leadership, technical assistance, and opportunities for collaboration. The goal of this program is to improve, restore, and protect local aquatic and terrestrial resources by improving the effectiveness of invasive species management efforts, engaging the public in management actions, and increasing awareness of invasive species issues throughout the eight-county, Western New York region. To achieve established goals, WNY PRISM coordinates several high profile and priority programs. WNY PRISM runs a robust Early Detection and Response Program, several Community Science Programs, a Crew Assistance Program that sees WNY PRISM work with dozens of partners across the region each year, and a Watercraft Inspection Stewardship Program with up to 20 Boat Stewards. This is in addition to expansive education and outreach, data collection, and information management efforts. For more information about WNY PRISM activities and results, see "VI. Western New York PRISM Activities" on page 26.

Isolating reproduction pheromone for invasive red swamp crayfish

This is a funded project led by Interim Director Pennuto with co-PI's Drs. Jinseok Heo and Sujit Suwal of the BSU Chemistry Department to identify a putative mating pheromone for invasive crayfish. Prior reviews of crustacean chemical communication indicate that potential signaling molecules range from peptides and proteins to small metabolites like nucleotides or sugar derivatives (Breithaupt and Thiel 2011). In *Procambarus clarkii* specifically, early physiological studies suggested the sex pheromone was likely a carbohydrate or polysaccharide (Ameyaw-Akumfi and Hazlett 1975). In contrast, recent untargeted metabolomic analyses have proposed chemically diverse candidate compounds, including steroid-like molecules such as mestranol (Zhou et al., 2023). This discrepancy, ranging from sugars to steroids, highlights that a narrowly targeted analytical strategy focused on a single compound class would risk overlooking the true bioactive signal.

Our group will employ an untargeted LC-Orbitrap mass spectrometry approach as the primary analytical platform. This strategy enables unbiased detection of dominant bioactive molecules across chemical classes, including peptides, nucleotides, and other highly polar metabolites, and supports accurate identification of the pheromonal signaling molecule in this invasive species.

Invasive crayfish management

Interim Director Pennuto has several small projects to assess a range of invasive crayfish management tools. Recently, a small pond in the region was invaded by red-swamp crayfish (*Procambarus clarkii*). Intensive trapping efforts were the first management application, removing nearly 3000 crayfish in three years. Mark-recapture and catch per unit effort data suggested the population size had been reduced, though not eliminated by these efforts.



Trap netting efforts at the pond in 2026.

The pond has no piscivorous fish present. In spring 2025, twenty 10-12 inch largemouth bass were introduced into the system to supplement the intensive trapping efforts. Summer 2026 catch data will be compared to previous years to assess this introduction. Additionally, there is a small artificial stream entering the pond as part of a recirculating system for the

complex. The stream was dewatered in the winter of 24/25 and 25/26 in an effort to freeze out populations in the stream. Catch data in summer 2026 will be compared to previous years to assess dewatering impacts. We will continue to monitor crayfish population response to these management efforts.



The artificial stream at the pond in summer (left) and when it was dewatered during the winter (right).

Native crayfish culturing

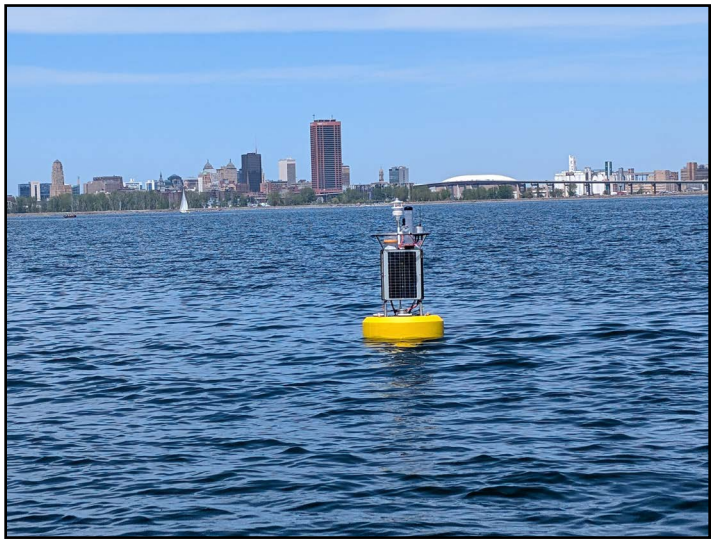
Competitive niche replacement occurs when one species having a large degree of niche overlap with similar species outcompetes rivals in an area. This outcome may be more prevalent following a species invasion. Locally, red swamp crayfish have invaded two locations in Western NY and are becoming the dominant species in the two habitats. Research suggests that native crayfish populations might be able to remain dominant in their local habitats if their population size is large enough. We are creating a laboratory culture of native White River crayfish (*Procambarus acutus acutus*) for potential release to locations where they have been on the decline since the arrival of red swamp crayfish as a management tool to assist native population decline.



A White River crayfish at the Field Station.

Eastern Lake Erie Weather/Data Buoys

PIs Brian Haas and Ben Szczygiel received another year of funding to operate the Dunkirk buoy, as part of the Great Lakes Observing System (GLOS). This seasonal buoy provides real-time wave, weather, and water conditions to a diverse set of users, spring through fall. We recognized the need for another observing system closer to Buffalo and sought funding to purchase and operate a new buoy, two nautical miles SSW of the City of Buffalo in approximately 40 ft of water. In Fall 2025, we received funding from the Greenway Ecological Standing Committee throught the New York Power Authority's Niagara River Greenway Ecological Fund to carry out this work. The buoy's maiden deployment was May 26, 2026. This new resource was well received by the community and provided new valuable insights into Lake Erie dynamics. Visit our website to learn more about the Eastern Lake Erie buoys.



The new Buffalo buoy was deployed this year.

Grants and Funding

Ongoing grants (total $12,147,266, including $8,109,671 for Buffalo State)

1. Goodrich, Z. East Canal Ecological Renovation at Tifft Nature Preserve, Buffalo Museum of Science. Niagara River Greenway Commission Greenway Ecological Standing Committee. $344,754 (**$18,378 for Buffalo State**). 2024–2026.
2. Haas, B., and B. Szczygiel, Co-PIs. Buffalo State University Dunkirk Buoy. National Atmospheric and Oceanographic Administration. **$10,820**. 2025–2026.
3. Haas, B., and B. Szczygiel, Co-PIs. New York Power Authority's Niagara River Greenway Ecological Fund, "Buffalo Weather Data Buoy Project." **$190,815**. 2025–2028.
4. Pennuto, C. Administration of the Western NY PRISM: Partnership for Regional Invasive Species Management. NYS DEC. **$4,667,125**. 2024–2028.
5. Pennuto, C. Efficacy of predatory fish to control invasive crayfish in small ponds. USFWS, Lower Great Lakes Fisheries Unit. **$78,420**. 2023–2025.
6. Pennuto, C. (PI) with J. Heo and S. Suwal (co-PIs). Isolation of breeding pheromone for red swamp crayfish (*Procambarus clarkii*), a Tier 2 aquatic invasive species. **$105,332**. 2026–2028.
7. Watkins, J., L. Rudstam, L. E. Burlakova, A. Y. Karatayev, and A. Hrycik. Great Lakes Biology Monitoring Program: Zooplankton, *Mysis*, and Benthic Components. GLRI, U.S. EPA. $6,750,000 **($3,038,781 for Buffalo State)**. 2022–2028.

Publications and Presentations

Refereed Journal Publications (published/accepted)

1. **Burlakova, L. E.**, **A. Y. Karatayev**, O. N. Makhutova, **S. E. Daniel**, J. Scharold, A. E. Scofield, and E. K. Hinchey. 2025. The benthic community of Lake Superior: Analysis of spatial and temporal trends from 1973 to 2022. *Journal of Great Lakes Research*, 52, 102624. DOI: 10.1016/j.jglr.2025.102624.
2. Glenn, K. R., and **C. M. Pennuto**. Round goby presence alters drift in occupied streams. *Freshwater Science*.
3. Harrow-Lylem, T. J., A. K. Elgin, M. D. Rowe, P. Alsip, **L. E. Burlakova**, **A. Y. Karatayev**, M. McCusker, R. Valipour, and D. C. Depew. 2025. Developing the first binational dreissenid biomass map for Lake Erie: Lessons learned and future improvements. *Journal of Great Lakes Research*. DOI: 10.1016/j.jglr.2025.102652.
4. **Karatayev, A. Y.**, and **L. E. Burlakova**. 2026. Invasion dynamics and impact of non-native molluscs in the Laurentian Great Lakes. *Journal of Great Lakes Research*, 52: 102706. DOI: 10.1016/j.jglr.2025.102706.
5. **Karatayev, A. Y.**, **L. E. Burlakova**, J. Watkins, V. Karatayev, **N. Barulin**, and L. Rudstam. 2026. The impacts of invasive zebra and quagga mussels on North American (*Diporeia*) and European (*Monoporeia*) amphipods. *Reviews in Fisheries Science & Aquaculture*. DOI: 10.1080/23308249.2026.2663276.
6. Klimczak, E., and **C. M. Pennuto**. The winner-loser effect as a management strategy for invasive crayfish. *Aquatic Invasions*.
7. Makhutova, O. N., **L. Burlakova**, and **A. Karatayev**. 2025. Assessment of omega-3 PUFA reserves in the quagga mussel of Lake Ontario, with a special focus on its diet. *Inland Waters*. DOI: 10.1080/20442041.2025.2483570.
8. Smith, E. D., L. J. McGaughey, J. Marty, A. E Kirkwood, **L. Burlakova**, **A. Karatayev**, and J. Ridal. Revisiting carbon cycling in the Laurentian Great Lakes following dreissenid mussel invasion. *Journal of Great Lakes Research*, 102852. DOI: 10.1016/j.jglr.2026.102852.
9. Soto, I., R. N. Cuthbert, M. Grabowski, D. Copilas-Ciocianu, J. Grabowska, K. B. Spychalska, T. Rewicz, M. Ondračková, Y. Kvach, P. Borza, **A. Y. Karatayev**, **L. E. Burlakova**, S. Bailey, H. J. MacIsaac, J. T.

A. Dick, A. Kouba, P. J. Haubrock, and E. Briski. Global expansion of review Ponto-Caspian aquatic invaders: Drivers, trends, and taxonomic biases in a changing world. *Freshwater Biology*.

10. Wagner, J. A., and **C. M. Pennuto**. 2025. Mass loss and nutrient release of sloughed *Cladophora*. *Aquatic Ecosystem Health & Management*, 28:1-10. DOI: 10.65087/aehm.028.02.1.

Refereed Journal Publications Submitted (in review)

1. **Barulin, N. V.**, **L. E. Burlakova**, **A. Y. Karatayev**, **S. E. Daniel**, A. E. Scofield, E. K. Hinchey, and R. Griffiths. 2026. Data on the density of benthic invertebrate taxa recorded in lake-wide surveys of Lake Huron from 1952 to 2022. In U.S. EPA review.
2. Boudet, S., D. Trolle, A. Nielsen, **L. E. Burlakova**, **A. Y. Karatayev**, S. Ordoez, P. Spaak, and B. W. Ibelings. A modular bioenergetics model for invasive bivalves in lakes: Integrating *Dreissena* (zebra and quagga mussels) dynamics into the Water Ecosystems Tool (WET). *Limnology and Oceanography: Methods*.
3. Hofstetter, L., T. M. Müller, M. Bourqui, **L. E. Burlakova**, Z. C. Cristante, **A. Y. Karatayev**, S. Kessler, A. Narwani, J. L. Santos, L. Sturm, N. Wellauer, P. Spaak, and A. A.-T. Weber. Rapid shallow-water saturation and deep-water expansion of an invasive freshwater ecosystem engineer in a deep European lake. *Limnology & Oceanography*.
4. **Karatayev, A. Y.**, **L. E. Burlakova**, V. A. Karatayev, L. G. Rudstam, J. M. Watkins, K. E. Kovalenko, A. L. Koeberle, S. Boudet, B. W. Ibelings, **N. V. Barulin**, D. N. Gallina, J. Mauch, A. A.-T. Weber, H. Waterfield, M. Albright, and P. Spaak. 2026. Larger lakes are hit harder and longer by *Dreissena* invasion. *Biological Invasions*.
5. **Karatayev, A. Y.**, **N. V. Barulin**, **S. E. Daniel**, A. E. Scofield, E. K. Hinchey, R. Griffiths, and **L. E. Burlakova**. 2026. Long-term dynamics of the Lake Huron benthic community. *Journal of Great Lakes Research*.
6. Koeberle, A. L., B. E. Hammers, W. Pearsall, P. Austerman, D. Mulhall, H. Waterfield, M. Albright, D. S. Stich, N. T. Jordan, S. Wells, A. B. Davis, D. S. Derminio, **A. Y. Karatayev**, **L. E. Burlakova**, M. Chalupnicki, J. E. McKenna, Jr., T. Stewart, C. Hotaling, K. Nasworthy, S. Lawhun, J. Watkins, S. A. Sethi, and L. G. Rudstam. To the brink: Alewife collapse associated with declining productivity in lakes. *Ecosystems*.
7. Lyubas, A. A., O. S. Pokrovsky, I. N. Bolotov, A. S. Aksenov, O. V. Aksenova, Y. V. Bespalaya, A. E. Bogan, G. V. Bovykina, **L. E. Burlakova**, N. Chan, O. A. Chelpanovskaya, C. Clavijo, G. A. Dvoryankin, T. A. Eliseeva, B. Yu. Filippov, M. Yu. Gofarov, H. A. Jones, **A. Y. Karatayev**, I. S. Khrebtova, A. V. Kondakov, E. S. Konopleva, A. V. Kropotin, D. V. Kruk, I. A. Kuznetsova, Z. Lunn, V. Mavromatis, O. V. Munjiu, A. P. Novoselov, T. F. Obada, V. Pesic, J. M. Pfeiffer, A. R. Shevchenko, A. A. Soboleva, O. V. Travina, I. V. Vikhrev, M. V. Vinarski, G. Wilson, N. A. Zubrii, and C. T. Callil. Evolutionary divergence and continental barriers structure shell biomineralization in freshwater mussels. *PNAS*.
8. Lyubas, A. A., O. S. Pokrovsky, I. N. Bolotov, Y. V. Bespalaya, A. E. Bogan, **L. E. Burlakova**, N. Chan, C. Clavijo, M. Yu. Gofarov, H. A. Jones, **A. Y. Karatayev**, A. V. Kondakov, D. V. Kruk, Z. Lunn, V. Mavromatis, O. V. Munjiu, T. F. Obada, V. Pesic, J. M. Pfeiffer, I. V. Vikhrev, and C. T. Callil. Multi-scale controls on lithium incorporation into freshwater mussel shells. *Biogeochemistry*.
9. Wirebach, K. and **C. M. Pennuto**. Habitat suitability analysis for potential reintroduction of Lake Sturgeon (*Acipenser fulvescens* Rafinesque) in the U.S. watershed of Lake Erie. *Journal of Great Lakes Research*.

Conference Presentations

1. Barulin, N. V., A. Y. Karatayev, and L. E. Burlakova. "Rapid assessment of *Dreissena* density in Lake Michigan in 2025" (poster). 24th Annual Faculty/Staff Research and Creativity Fall Forum, Buffalo State University. November 13, 2025. Buffalo, New York.
2. Barulin, N. V., L. E. Burlakova, A. Y. Karatayev, S. E. Daniel, and K. Kamke. "Benthic CSMI Lake

Michigan 2025 review, plans for benthic CSMI 2026, and evolution of video benthic assessment methods." Invited talk presented at EPA Great Lakes National Program Office. February 17, 2026. Chicago, Illinois.

3. Burlakova, L. E., and A. Y. Karatayev. "Planktonic larvae of zebra and quagga mussels: Seasonal dynamics and effects on freshwater communities." Invited talk. SeeWandel - Climate Thematic Working Group "Importance of the quagga mussel." 3rd meeting. November 19, 2025. Eawag, Dübendorf, Switzerland.
4. Burlakova, L. E., A. Y. Karatayev, and N. Barulin. 2026. "Video imaging for assessment of Great Lakes benthoscapes." Joint conference of the International Association for Great Lakes Research and the Society of Canadian Aquatic Sciences. May 25-29, 2026. Winnipeg, Manitoba, Canada.
5. Burlakova, L. E., A. Karatayev, N. Barulin, and S. Daniel. "Benthos Program highlights and research." Invited talk presented at EPA Great Lakes National Program Office. February 17, 2026. Chicago, Illinois.
6. Burlakova, L. E., A. Y. Karatayev, N. V. Barulin, S. Daniel, O. Makhutova, and L. Denecke. "Major findings of the 2023 Lake Ontario Benthic CSMI Survey." Lake Ontario Binational Science & Monitoring Reporting Workshop. January 13-14, 2026. Virtual.
7. Burlakova, L. E., A. Y. Karatayev, and V. A. Karatayev. "Boom or bust? Four decades of dreissenid invasion in the Laurentian Great Lakes." Aquatic Confluence: Science, People, Knowledge. ASLO-SIL Joint Meeting. May 12-16, 2026. Montreal, Quebec, Canada.
8. Daniel, S. E., L. Burlakova, A. Karatayev, N. Barulin, K. Kamke, B. Tulumello, A. Tulumello, and K. Hastings. "Benthic lab procedures and an update on non-native Oligochaeta." Invited talk presented at EPA Great Lakes National Program Office. February 17, 2026. Chicago, Illinois.
9. Daniel, S. E., L. E. Burlakova, A. Y. Karatayev, N. V. Barulin, K. Hastings, B. Tulumello, and K. Kamke. "Great Lakes Center is a key player in the largest monitoring program of benthic invertebrates in the Great Lakes" (poster). 24th Annual Faculty/Staff Research and Creativity Fall Forum, Buffalo State University. November 13, 2025. Buffalo, New York.
10. Enov, A. E., D. Szucs, V. Barbosa, J. Cristobal, S. E. Daniel, K. Kamke, N. V. Barulin, L. E. Burlakova, A. Y. Karatayev, and D. Aga. "PFAS analysis reveals different accumulation patterns across Great Lakes water, sediment, and *Dreissena* mussels" (poster). Climate Change and Emerging Contaminants: Risks and Responses in Asia and Beyond, University at Buffalo. April 9-10, 2026. Buffalo, New York.
11. Haas, B., and B. Szczygiel. "Examining summer seiche events on Lake Erie using buoy data" (poster). 24th Annual Faculty/Staff Research and Creativity Fall Forum, Buffalo State University. November 13, 2025. Buffalo, New York.
12. Haas, B., and B. Szczygiel. "Buffalo's new weather buoy." BMC Speaker Series, Buffalo Maritime Center. April 30, 2026. Buffalo, New York.
13. Karatayev, A. Y., and L. E. Burlakova. "Quagga mussel in the Great Lakes: Population dynamics, distribution, and ecosystem impacts." Invited talk. Practice oriented (PEAK) Course "Quagga mussel in Switzerland – current state of knowledge and further development of prevention and monitoring measures." February 25, 2026. EAWAG, Dübendorf, Switzerland.
14. Karatayev, A. Y., L. E. Burlakova, J. Watkins, V. Karatayev, N. Barulin, and L. Rudstam. "Could invasive dreissenids drive *Diporeia* to extinction? A synthesis." Joint conference of the International Association for Great Lakes Research and the Society of Canadian Aquatic Sciences. May 25-29, 2026. Winnipeg, Manitoba, Canada.
15. Karatayev, A. Y., L. E. Burlakova, J. M. Watkins, V. A. Karatayev, N. V. Barulin, and L. G. Rudstam. "Dreissenids are driving the amphipod *Diporeia* toward extirpation in the North American Great Lakes; are *Monoporeia* in Eurasian lakes next? A synthesis." Invited talk presented at EPA Great Lakes National Program Office. February 17, 2026. Chicago, Illinois.
16. Karatayev, A. Y., L. E. Burlakova, V. A. Karatayev, L. G. Rudstam, J. M. Watkins, K. E. Kovalenko, A. E. Scofield, A. L. Koeberle, S. Boudet, B. W. Ibelings, N. V. Barulin, D. N. Gallina, J. Mauch, A. A.-T. Weber, and. P. Spaak. "Lake morphometry determines *Dreissena* ecosystem impact: Size matters." Invited talk. SeeWandel - Climate Thematic Working Group "Importance of the quagga mussel." 4th meeting. February 26, 2026. Eawag, Dübendorf, Switzerland.

17. Karatayev, A. Y., L. E. Burlakova, V. A. Karatayev, L. G. Rudstam, J. M. Watkins, K. E. Kovalenko, A. E. Scofield, A. L. Koeberle, S. Boudet, B. W. Ibelings, N. V. Barulin, D. N. Gallina, J. Mauch, A. A.-T. Weber, and P. Spaak. "Lake morphometry determines *Dreissena* ecosystem impact: Size matters." Aquatic Confluence: Science, People, Knowledge. ASLO-SIL Joint Meeting May 12-16, 2026. Montreal, Quebec, Canada.
18. Pennuto, C. M. "Invasive crayfish management in Western New York and the Great Lakes." 24th Annual Faculty/Staff Research and Creativity Fall Forum, Buffalo State University. November 13, 2025. Buffalo, New York.
19. Pennuto, C. M. "Western NY invasive crayfish updates." DEC Ecology Series, Reinstein Woods. August 2025. Depew, New York.
20. Pennuto, C. M., and B. Roth. "New York crayfish monitoring and aquarium trade."
21. Taylor, R., S. Kittle, B. Boscarino, and M. Pistolese-Shaw. "From awareness to action: Education and outreach methods for addressing invasive species." New York State Invasive Species Expo, NYS Department of Environmental Conservation. September 15, 2025. Saratoga Springs, New York.



GLC researchers at the 24th Annual Faculty/Staff Research and Creativity Fall Forum.



Ben, Nik, and Brian collecting ponars in the Finger Lakes in August 2025. One sample was collected from the deepest point of Seneca Lake - 618 feet deep!



The GLC won Best Decorated Pumpkin at the Annual Autumn Equinox Pumpkin Drop at BSU. The pumpkin was designed and carved by research technicians Angela and Brianne Tulumello.



Mary Perrelli and Stephen Vermette (far left and far right) accompanied the EcoBengals Club to a visit at the Field Station. Brian Haas (second from right) took them aboard the R/V *John J. Friedhoff*.

III. Education

The GLC fulfills its educational mission directly through the classes its researchers teach, through its Master of Arts and Master of Science graduate programs in Great Lakes Environmental Science, through the support we offer to faculty teaching classes pertaining to environmental sciences, through the seminar speakers we sponsor, and through our educational activities in the community.

Great Lakes Center M.S. and M.A. Graduate Programs

The GLC administers two interdisciplinary applied environmental science programs in Great Lakes Environmental Science (GLES). The GLES programs provide an opportunity for students to pursue graduate studies through a thesis-based Master of Arts (M.A.) and an internship-based Master of Science (M.S.). Both programs provide students with the opportunity to attain a broad understanding of the physical, chemical, biological, and social factors that comprise the Great Lakes ecosystems. GLES graduates are prepared to provide a leadership role as they address a broad range of problems and issues related to the management of resources within the Great Lakes and surrounding watersheds.

Students enrolled in GLES Administered by the GLC in 2025–2026:

Master of Art:
Skyler Braeges
Danielle Dolan
William Jackson
Allison Panek

Master of Science:
Cameron Atkins
Brigid Benson
Richard Campbell
Isabella Rusillo
Robert Salefske

Advising Undergraduate and Graduate Students

- Lyubov Burlakova was a graduate committee member for M.S. student Sarah Lawhun (Cornell University, 2024-2025).
- Lyubov Burlakova and Alexander Karatayev were graduate committee members for Ph.D. student Julia Conrad (Eawag, Switzerland, 2025).
- Chris Pennuto was the advisor of 7 graduate students (Emily Klimczak, Allarae Prigan, Cameron Atkins, Brigid Benson, Richard Campbell, Isabella Rusillo, Robert Salefske, and Nick Hahn) and one undergraduate student (Sarah Klawinski).



Art students working with Dr. Dave Mawer from the Art and Design department visited the Field Station in the fall. They collected photo, video, and audio recordings of Lake Erie for a group project.



One of the art projects from the showcase "Visualizing Lake Erie: Where Art and Data Meet," on May 3 - May 9, 2026. This piece is "Seiche Event 7/16/25-7/19/25" by Jameson Alea, shown again at the Waterside Showcase in July 2026.

IV. Outreach, Service, and Professional Development

All members of the GLC have been actively involved in outreach and service to the profession, to the University, and to the community.

Nikolai Barulin:

- Co-advisor to master's student Isabella Russillo.
- Contributed to the Great Lakes Center social media post "Lake Michigan CSMI Survey 2025," featuring a video and description of BIS work aboard the R/V *Lake Guardian*, posted August 4, 2025, on Facebook, LinkedIn, and Instagram.
- Contributed to the social media feature "Underwater Michigan," featuring BIS work aboard the R/V *Lake Guardian*, posted September 30, 2025, on Facebook, LinkedIn, and Instagram.
- Contributed to the social media feature "Behind BIS," describing work with the 360 BIS aboard the R/V *Lake Guardian*, posted October 1, 2025, on Facebook, LinkedIn, and Instagram.
- Participated in an interview with The Buffalo News for the article "The Ischua Creek Disaster: Great Lakes Cheese Accident Triggers a Series of Fish Die-offs."
- Associate Editor for *Advances in Oceanography & Marine Biology* (USA), *Proceedings of the Russian Federal Research Institute of Fisheries and Oceanography* (Russia), *Belarus Fish Industry Problems* (Belarus), and *Technologies for the Food and Processing Industry of AIC - Healthy Food* (Russia).
- Reviewer for the *Journal of Great Lakes Research* and *Aquaculture*.
- Conference reviewer for the International Association for Great Lakes Research (IAGLR).
- Member of Network of Aquaculture Centers in Central-Eastern Europe (NACEE), World Sturgeon Conservation Society (WSCS), International Association for Great Lakes Research (IAGLR).
- Co-chaired the session "At the Base of it All: Investigating and Monitoring Lower Food Webs in Large Lakes" at the 69th Annual Conference on Great Lakes Research/IAGLR & SCAS-SCSA Joint Conference, Winnipeg, Manitoba, Canada, May 26, 2026.
- Completed the ESRI web course Mapping Clusters: Introduction to Statistical Cluster Analysis, January 2026.

Lyubov Burlakova:

- Member of Buffalo State Sustainability Committee.
- Member of Search Committee for an Assistant Professor (January-April 2026).
- Ruth Huppuch Research and Education Award Fund Committee member.
- Committee member for Great Lakes Center Goals 2030.
- Member of Buffalo State's "The Friends of the Maud Gordon Holmes Arboretum."
- Graduate Committee member, Sarah Lawhun, M.A. student, Cornell University (2023-2025).
- Graduate Committee member, Salomé Boudet, Ph.D. Student, Institute for Environmental Sciences, Department F. -A. FOREL, Microbial ecology group, University of Geneva, Switzerland (2025-2026).
- Graduate Committee member, Julie Conrad, Ph.D. student, the Swiss Federal Institute of Aquatic Science and Technology (Eawag), Dubendorf, Switzerland (2024-2026).
- Associate Editor for the *Journal of Great Lakes Research* and *Hydrobiological Journal* (Ukraine).
- Organizer of a special session at ASLO Aquatic Sciences Meetings (2026).
- Organizer of a special session at the Annual Meetings of the International Association of Great Lakes

Research (2026).

- Participated in the preparation of the State of the Great Lakes 2025 Report (U.S. EPA and Canada).
- Participated in a collaboration between the Great Lakes Center and the Swiss Federal Institute of Aquatic Science and Technology (Dr. Piet Spaak).
- Together with colleagues from the Institute of Zoology (Georgia), the Research Center in Biodiversity and Genetic Resources (Portugal), the University of Life Sciences in Poznań (Poland), and the Italian National Research Council, conducted a state-wide survey of freshwater mussels in the Republic of Georgia (October 2025).



Nicoletta Ricciardi, Lyuba Burlakova, Maria Urbańska, and Manuel Lopes-Lima sampling freshwater mussels in the Republic of Georgia.

- Member of Aquatic Life Use Metrics - Benthic Invertebrate subgroup, led by Ohio Sea Grant and Ohio EPA, to develop aquatic indicators for Lake Erie.
- Member of Freshwater Mollusk Conservation Society, Association for the Sciences of Limnology and Oceanography, International Association for Great Lakes Research, Society of International Limnology, and Ecological Society of America.
- Reviewed manuscripts for the *Journal of Environmental Management*, *Hydrobiology*, and *Journal of the Great Lakes Research*.
- Interviewed by Karin Brulliard, The Washington Post, on dreissenid invasion (article "Prolific alien invaders threaten waters in the West," published September 15, 2025).

Susan Daniel:

- Wrote articles for GLC Newsletter fall series.
- Attended online training series for "Leading People Responsibly Series Winter 2024-2025," hosted by SUNY RF.
- Provided tours of the GLC labs to high school students, July 23 and October 23, 2025.
- Continued to serve as the Great Lakes Center Safety Officer and participated in meetings of the Chemical and Biological Hygiene committee, as well as participated in Laboratory Inspections for other departments.
- Participated in the Big Dig campus tree planting event, October 18, 2025.
- Attended the Graduate Open House to represent the GLC, November 22, 2025.
- Organized participation in the annual Buffalo City School's Career Fair, Spring 2026.
- Organized and presented to students at Lovejoy Discovery School #43 on May 20, 2026.
- Organized and presented to students at Harvey Austin School #97 on May 13, 2026.
- Reviewed invasive species information for GLANSIS in the fall of 2025 and spring of 2026.
- Member of the Buffalo State's "The Friends of the Maud Gordon Holmes Arboretum."


Susan Daniel planting a tree at Big Dig VII.

- Member of the Justice, Equality, Diversity, and Inclusion Committee for the International Association for Great Lakes Research.
- Member of the International Association for Great Lakes Research Sustainers Circle.
- Reviewed manuscript for *Hydrobiologia*, Spring 2026.

Catherine Eaton:

- Led Walk and Talk at Akron Falls County Park.
- Facilitated WNY Mile-a-minute Working Group to coordinate regional survey, removal, and education efforts.
- Coordinated with Department of Environmental Conservation and SUNY Brockport to hold Mile-a-Minute Working Group meetings.
- Represented Western New York and WNY PRISM as part of the NYS Invasive Species Program Terrestrial Invasive Species Working Group.

Nick Farese:

- Facilitated a Water Chestnut Working Group Meeting to bring together organizations from across the region to focus on removal efforts of this priority species.
- Member of the NYS *Hydrilla* Task Force.
- Reviewed and updated priority species lists for Western New York: Approaching Region, Early Detection, and Data Gap.
- WNY PRISM placed second in the iMapinvasives water chestnut reporting challenge in 2025.
- Attended the 2025 NYS Invasive Species Expo in Saratoga Springs.
- Attended "Anticipating Freshwater Invasive Species Risk in the Northeast United States," a webinar hosted by the Northeast Climate Adaptation Science Center (NCASC).

Brian Haas:

- Provided tours and field trips for a variety of groups including Buffalo State classes, clubs, faculty and staff, Buffalo Maritime Center, West Side Rowing Club, Riverside High School, and many other local organizations.
- Assisted both graduate and undergraduate students in limnological, ecological, and aquatic lab procedures related to Buffalo State courses and research.
- Provided numerous interviews for articles and news stories about our Lake Erie data buoys.

Kit Hastings:

- Organized and promoted four events, including "Winter's Last Breath," a student welcome event with games; the Great Lakes Experience events "Glenorchy's Lost Grain" and "Weather Phenomena Powered by the Great Lakes;" and "Waterside Showcase: Open House and Demonstration Day" with Buffalo Maritime Center, West Side Rowing Club, and Buffalo Yacht Club at the GLC Field Station.
- Helped at three education or outreach events:



Kit Hastings, Susan Dickinson, and Dr. Stephen Vermette organized the Week of Welcome event "Winter's Last Breath," which featured the Blizzard of '77 board game, posters about the Blizzard of '77, snowball cornhole, and winter-themed treats for returning students.

Buffalo State University "2025 Graduate and Professional School Fair;" the C-STEP program tour of the labs; and Aquarium of Niagara "Earth Day in Action."

- Edited and produced two issues of GLC Newsletter, writing five articles.
- Prepared the GLC Annual Report for publication.
- Finished the redesign of the GLC website and continued to manage content.
- Produced four posters and many flyers and promotional materials for events.
- Assisted with the Great Lakes Long-term Biological Monitoring Program's Lake Michigan CSMI project (oligochaete taxonomy).
- Added 20 species profiles to the Great Lakes Benthic Invertebrate Guide.



Ben Szczygiel (pictured), Dr. Chris Pennuto, Susan Dickinson, and Kit Hastings brought a popular living invertebrates activity to the Aquarium of Niagara in April.

- Attended axe-con 2026, a virtual accessibility conference.
- Volunteered at Friends of the Buffalo State Maud Gordon Holmes Arboretum's Big Dig VII, and made reusable bags for the food pantry at "T-shirt to Bag" event.
- GLES program co-coordinator.
- Accessibility Liaison for the Great Lakes Center.
- Advisor of the Blerd Club.
- Member of the Buffalo State Institutional Animal Care and Use Committee, oSTEM, and Buffalo State Bengal Allies and LGBTQ+ Resource Center.

Alexander Karatayev:

- Committee member for a Ph.D. student, Julie Conrad at Eawag, the Swiss Federal Institute of Aquatic Science and Technology.
- Wrote articles for GLC Newsletter series.
- Ruth Huppuch Research and Education Award Fund Committee member.
- Associate Editor of *Hydrobiological Journal* (Ukraine).
- Organizer of a special session at ASLO Aquatic Sciences Meetings (2026).
- Organizer of a special session at the Annual Meetings of the International Association of Great Lakes Research (2026).
- Participated in the preparation of the 2025 State of the Great Lakes Report (U. S. EPA and Canada).
- Participated in multiple phone conferences with EPA, NOAA, USGS, and USFWS about current research and potential future projects.
- Participated in meetings with our partners from Cornell University on the Great Lakes Long-term Biological Monitoring Program.
- Member of Aquatic Life Use Metrics - Benthic Invertebrate subgroup, led by Ohio Sea Grant and Ohio EPA, to develop aquatic indicators for Lake Erie.
- Member of Freshwater Mollusk Conservation Society, Association for the Sciences of Limnology and Oceanography, International Association for Great Lakes Research, and Society of International Limnology.

- Reviewed manuscripts for the *Journal of Great Lakes Research* and *Hydrobiologia*.
- Interviewed by Karin Brulliard, The Washington Post, on dreissenid invasion (article "Prolific alien invaders threaten waters in the West," published September 15, 2025).

Andrea Locke:

- Coordinated with the Department of Agriculture and Markets to direct WNY response to Spotted Lanternfly.
- Led efforts to release swallow-wort biocontrol agent at two sites; coordinated with partners and volunteers to assist with monitoring.
- Member Great Lakes *Phragmites* Collaborative Advisory Committee, Funding, and *Phragmites* Adaptive Management Framework Sub-Committees.
- Participated in Great Lakes Action Agenda Lake Erie Sub-Basin Work Group and sub-committee on Cattaraugus Creek (Cattaraugus Creek Integrated Watershed Action Plan), NYS Cooperative Agricultural Pest Survey Work Group, Tonawanda Creek/Erie Canal *Hydrilla* Demonstration Project Collaborative as part of Advisory Committee, and Lake Erie Coastal Watershed – Habitat Restoration Workshop facilitated by the Coastal States Organization.
- Member 18 Mile Creek Technical Advisory Committee.
- Developed invasive species removal and native plant community restoration plan for Buffalo State University's Ketchum Garden.
- Attended Cornell Integrated Pest Management Seminar, September 2025; New York State Invasive Species Conference, Saratoga Springs, NY, September 2025; Biocontrol Summit, NAISMA, December 2025; and Invasive Species and Climate Change Conference, December 2025.

Christopher Pennuto:

- Workshop coordination/presentation for 2025 Invasive Crayfish Collaborative and Reinstein Woods ecology series.
- Coordinator, GLC Graduate programs.
- Chair, Biology Department.
- Campus Open House event presentation.
- Summer orientation event presentation.
- Thesis advisor, Emily Kliczak.
- Member of Society of Freshwater Science, Association for Great Lakes Research, and Ecological Society of America.
- Reviewer for *Journal of Great Lakes Research*, *Ecology of Freshwater Fish*, and *Freshwater Science*.
- Initiated a new event series, The Great Lakes Experience. 5 events to be held over the next year. Event 1 and 2 held in Spring 2026: "Glenorchy's Lost Grain," in collaboration with History Department; and "Great Lakes Weather Phenomena," in collaboration with Geosciences.

Rachel Taylor:

- Led Walk & Talks at Audubon Community Nature Center, Nike Base Park, and Moss Lake Preserve.
- Regional representative for DEC led Invasive Species Education and Outreach Committee.
- Coordinated Boot Brush Station Program to support partners in invasive species spread prevention efforts.
- Coordinated with community scientists for Hemlock Woolly Adelgid Surveys, including survey locations and data collection.
- Coordinated with community scientists for Hemlock Stand Assessments, including assessment locations and data collection.

- Coordinated with Department of Agriculture and Markets, partners and community scientists to facilitate and implement spotted lanternfly survey and trapping efforts.
- Hosted two invasive species removal volunteer workdays, one in partnership with the Friends of Letchworth State Park and one with the Western New York Land Conservancy, to help community members learn about and participate in invasive species management.



Dr. Andrew Nicholls, Professor and Chair of History and Social Studies Education, wove a tale of shipwrecks and insurance law for The Great Lakes Experience "*Glenorchy*'s Lost Grain" in March 2026.



Dr. Stephen Vermette, Professor of Geosciences, curated the twenty posters on display for The Great Lakes Experience "Weather Phenomena Powered by the Great Lakes" in April 2026.



A sunset over Lake Michigan in July 2025.



Chicago, seen from the R/V *Lake Guardian* in July 2025.

V. Partnerships and Programs

With new leadership comes new initiatives. The GLC is nurturing new partnerships with both like-minded community organizations and campus departments. In Summer 2025, we began summer programming with West Side Rowing Club (WSRC), hosting several cohorts of young rowers to explore concepts in aquatic biology and water science to complement their time spent rowing the Black Rock Canal. Both Brian Haas and Ben Szczygiel were instrumental in providing new learning experiences for the rowers. Those summer experiences continued into 2026.

The GLC partnered with WSRC, Buffalo Maritime Center, and Buffalo Yacht Club while hosting an open house event at the Field Station in July 2026, titled "Waterside Showcase Community Open House & Demonstration Day." Nearly 200 attendees shared the Field Station for an afternoon of discovery about these four organizations. Plans are under way for a second open house in 2027.

On campus, the GLC initiated a new event series titled "The Great Lakes Experience." The series is a year-long event where the Great Lakes Center is partnering with departments across campus to explore how the Great Lakes have, are, or will influence our lives here in Buffalo and throughout the Great Lakes watershed. The Great Lakes Center has a long and successful tradition of doing research and studies within the waters of the Great Lakes, but these lakes have influence well beyond their shorelines. This series is an attempt to highlight some of those influences, from literature and music, history and economics, weather and recreation, to cuisine and public health, and of course, water-specific issues like drinking water quality, invasive species effects, and climate change impacts.

We currently have 5 events lined up for The Experience with partners from History, Geosciences, Burchfield-Penny, Anthropology & Culture Studies, and Hospitality & Tourism.



Brian Haas showing new BSU President Jennifer Burris and guests how to use a ponar aboard the R/V *John J. Freidhoff* at the Waterside Showcase, one of several demonstrations.



The Buffalo Maritime Center brought the *Seneca Chief*, a replica canal boat they built for the bicentennial celebration of the Erie Canal, and they had some other activities.



The West Side Rowing Club was at the Field Station and a short walk away at the Frank Lloyd Wright Fontana Boat House.



The Buffalo Yacht Club had information about their Learn to Sail classes for youth and adults.

VI. Western New York PRISM Activities

Western New York Partnership for Regional Invasive Species Management (WNY PRISM) is a sponsored program of the Research Foundation for SUNY Buffalo State University and is hosted by the Great Lakes Center. Funding for WNY PRISM is provided by the Environmental Protection Fund through a contract with the NYS Department of Environmental Conservation. Funding for WNY PRISM, through a new contract that began January 1, 2024, supports continued operations through December 31, 2028.

Introduction

WNY PRISM works to address invasive species priorities using a coordinated partnership network, for which we provide leadership, technical assistance and opportunities for collaboration. Our goal is to improve, restore and protect local aquatic and terrestrial resources by improving the effectiveness of invasive species management efforts, engaging the public in management actions, and increasing awareness of invasive species issues throughout our eight-county region. By fostering regional collaboration, the impact of invasive species will be minimized, and the natural resources and beauty of western New York will be preserved.

WNY PRISM addresses invasive species issues as identified within the new WNY PRISM Strategic Plan 2025-2029, which was developed through a year-long collaborative process involving regional partners. The strategic plan identifies five goals associated with WNY PRISM's established core functions (Partnership, Community Engagement, Prevention, Early Detection and Response, and Management and Habitat Restoration), which are further broken down into objectives and strategies for implementation. The strategic plan is supported by annual work plans that identify specific tasks WNY PRISM staff will focus on in any given year. WNY PRISM operates on the calendar year, and the WNY PRISM 2025 and 2026 Annual Work Plans provided the framework for FY26.

Program Highlights and Accomplishments

WNY PRISM continues to address invasive species priorities through our many programs and essential partnerships with regional stakeholders. Since being established in 2014, WNY PRISM has: recorded over 31,000 invasive species presence/absence data points; held and/or participated in 530 educational events; conducted over 90,000 boat inspections; completed 131 Crew Assistance Program Projects; surveyed, monitored and managed over 40 early detection sites with 9 sites reaching "presumed eradicated" after 7 years of no plants found; hired 201 summer employees; and worked with 241 partner organizations and agencies.

WNY PRISM maintains an Approaching Region Priority List and Early Detection Priority Species List, along with a Data Gap Species Priorities (Priority Invasives), which provide guidance for prioritizing survey and management activities for region. The lists were updated for 2026 with slender false brome (*Brachypodium sylvaticum*) and red swamp crayfish (*Procambarus clarkii*) being removed from the early detection list due to both spreading beyond the threshold for potential eradication. The approaching region list remained the same; however, the data gap species list saw sycamore maple (*Acer pseudoplatanus*) and rugosa rose (*Rosa rugosa*) replaced by wood sedge (*Carex sylvatica*) and white perch (*Morone americana*).



Rachel Taylor taught community scientists how to assess hemlock stands for impacts of hemlock woolly adelgid at Beaver Meadow Nature Preserve.

WNY PRISM administers four community scientist programs including the Hemlock Woolly Adelgid Hunters Program, Hemlock Stand Assessment Program, Trail Survey Program, and Spotted Lanternfly Trap Monitoring Program. These programs

were developed to engage people with data collection in support of established priorities and associated programs. By working with the public on collecting scientific data, WNY PRISM builds relationships with individuals, increases public awareness of invasive species, and expands regional capacity to address invasive species issues.

Education and outreach events, whether held by WNY PRISM or our partners, offer an opportunity to reach a wide variety of audiences who have expressed interest in invasive species management and who are actively seeking more information. Between July 1, 2025, and June 30, 2026, WNY PRISM held and/or attended 48 events, with multiple events in each county, and recorded 10,114 direct contacts and 27,252 attendees. Attendance numbers for larger events were either provided by the host organization or are estimates based on staff observations.



At the Niagara County Environmental Field Days, Nandini Agarwal, Ingrid Siudzinski and Rachel Taylor presented and led an interactive activity with groups of third and fourth graders on why it is so important to Clean. Drain. Dry. boats and equipment before moving to a new body of water to prevent the spread of aquatic invasive species.

WNY PRISM's Boot Brush Station Program has been highly successful, with 66 boot brush stations being placed since the program began in 2016. The program aims to improve regional spread prevention efforts by providing partners with the signs and building materials necessary to install boot brush stations at popular trailheads and public access areas on their properties. The signs provide information on invasive species and advice on how visitors can help stop the spread of invasive species by cleaning off their footwear before and after hiking. New Boot Brush Stations were placed at sites in Wyoming and Erie Counties ahead of the June 6 kick-off for New York State Invasive Species Awareness Week.



Boat Steward Teresa Gutierrez talked with a boater about "Clean. Drain. Dry." at Amherst Veterans Canal Park.

WNY PRISM's Watercraft Inspection Stewardship Program, which runs Memorial Day through Labor Day each year, had a very successful 2025 summer season. Twelve launches were selected and staffed by two Lead Stewards and ten Stewards. Launches included one site on the Allegheny Reservoir (Onoville Marina), two sites on the Buffalo River (Black Rock Canal and Ohio Street Kayak Launch), one site on Cuba Lake, three sites on the Erie Canal (Amherst Veterans Canal Park, North Tonawanda Botanical Gardens and West Canal Park and Marina), two sites on Lake Erie (Sturgeon Point and Hanover Town Boat Launch), one site on Lake Ontario (Olcott Harbor), and two sites on the Niagara River (Gratwick Riverside and Griffon Parks). Ohio Street Kayak Launch and Black Rock Canal were staffed by Lead Stewards. Stewards conducted 12,711 watercraft inspections, had 31,259 interactions with members of the public, achieved an inspection acceptance rate among boaters of 87.2%, and intercepted 858 invasive organisms.

During an inspection, Stewards remove all organic matter from watercraft, including native and invasive species. Of the 5,254 total pieces of vegetation or debris removed in 2025, 858 were invasive organisms, 4,100 were native species, 287 were attached debris, and 10 were unidentified. The most intercepted invasive species was Eurasian watermilfoil (*Myriophyllum spicatum*, 344) followed closely by curly pondweed (*Potamogeton crispus*, 305),

which is similar to previous years. Additional species intercepted include zebra mussel (*Dreissena polymorpha*, 147), starry stonewort (*Nitellopsis obtusa*, 38), brittle naiad (*Najas minor*, 15), quagga mussel (*Dreissena bugensis*, 3), *Hydrilla* (*Hydrilla verticillata*, 2), spiny water flea (*Bythotrephes logimanus*, 2), round goby (*Neogobius melanostomus*, 1) and water chestnut (1). No aquatic invasive species previously unknown to be present in western New York were found during inspections in the 2025 season.

The WNY PRISM early detection program addresses the survey, removal and spread prevention of Tier 2 and Tier 1 species, with a focus on established early detection species and approaching region species priorities. Terrestrial early detection efforts focused on porcelain berry, slender false brome, scotch broom (*Cytisus scoparius*), mile-a-minute (*Persicaria perfoliata*), and amur corktree (*Phellodendron amurense*). Twelve early detection sites including active, inactive, and partner sites, were surveyed for a total of 263.2 acres. Treatments were conducted at eleven sites over a total of 47.7 acres. Additional early detection surveys were conducted at eight sites identified as high probability areas, totaling 921.62 acres.



Invasive Species Management Assistants Manmeet Singh and Winter Mumbach surveyed Anna Mae Bacon Park for amur corktree.

Aquatic early detection efforts focused on water hyacinth (*Oshuna crassipes*) and water lettuce (*Pistia stratiotes*). WNY PRISM's existing aquatic early detection monitoring sites, including three water lettuce and two water hyacinth sites, were surveyed, covering 368.9 acres. No water lettuce or water hyacinth were found; however, after receiving reports through iMapInvasives, two new sites in Erie County were confirmed. Associated removal efforts resulted in 601 water lettuce and twenty-nine water hyacinth removed from Walton Woods Park (7 acres surveyed/managed) and eighty-four water lettuce removed from Tifft Nature Preserve (16.1 acres surveyed/managed).



Six bags of water lettuce and water hyacinth removed from Walton Woods Park in 2025 by Nikolai White Bear, Mason Schultz, Mykayla Williams, and Nick Farese (photographer).

Crew Assistance Program (CAP) continues to be one of WNY PRISM's most successful programs, improving invasive species management across the region by assisting partners with invasive species surveys and mapping, invasive species removal, habitat management, and restoration projects. In 2025, WNY PRISM received fifteen proposals submitted by twelve unique partners from five of eight WNY PRISM region counties and eleven projects were selected, consisting of six survey and mapping projects and five removal and restoration projects. Completed projects resulted in 174.8 acres surveyed and 19.78 acres managed. In 2026, WNY PRISM received twenty-one proposals, marking the highest number of applications we have received in a single year. Eleven projects were selected (7 removal/restoration and 4 survey), and an additional two projects were placed on a waitlist.

2025 Program Highlights

- WNY PRISM has worked with 241 partner organizations, including 17 new partners in 2025.
- Hired seasonal Field Crew Leader to assist with project coordination and Crew supervision.
- Hired 16 summer staff – Invasive Species Management Assistants (3), Education and Outreach Assistant (1), and Watercraft Inspection Steward/Environmental Educators (12).
- Held 2 Partner Meetings with 50 attendees (Spring Meeting – 27, Fall Meeting – 23).
- Reviewed and updated WNY Invasive Species Tiers – updated tiers for 40 species and reviewed 64 previously untiered species – 224 species have been tiered.
- Updated WNY PRISM priority species lists for 2026 – early detection, approaching region, and data gap lists.
- 5,842 records submitted by 200 unique users, an increase of 52 users, were uploaded to iMapInvasives, including 90 unique species, an increase of 13 species.
- The top five recorded invasive species for WNY PRISM were multiflora rose (441), common buckthorn (438), bush honeysuckle (376), Eurasian watermilfoil (373), and hemlock woolly adelgid (HWA, 275).
- HWA was also the top not-detected species with 114 records.
- Released and monitored *Hypena opulenta* swallow-wort biocontrol agents at 3 sites across western New York – 75 adults, 75 larvae, and 25 pupae were released at each site.
- Coordinated 3 Community Science Programs: HWA Hunters and Stand Assessment, Spotted Lanternfly Trap Monitoring, and Trail Survey. 33 volunteers contributed 196.5 hours.
- 50 volunteers took part in 4 volunteer workdays, contributing 130.75 hours.



Andrea Locke led a Walk and Talk along Chautauqua Lake, for Chautauqua Institution Bird, Tree, and Garden Club.



Catherine Eaton presented to the public on mile-a-minute at a community meeting.



Rachel Taylor and Catherine Eaton led a community scientist training where they taught participants how to survey for hemlock woolly adelgid, an invasive insect that attacks eastern hemlocks.

- Obtained 402 signatures for WNY PRISM's Pledge to Protect program.
- WNY PRISM staff responded to 132 public inquiries.
- Developed 6 Boot Brush Stations – 60 stations have been installed since 2016.
- Facebook and Instagram posts generated 161,496 impressions, an increase of 166%.
- Tabled at 19 events, delivered 17 presentations, and held 5 Walk and Talks and 8 workshops.
- Events resulted in 2,366 direct contacts and had 20,021 attendees.
- Boat Stewards conducted 12,711 boat inspections working at 12 launches.



At the Environmental Ambassadors Summit, hosted by the Niagara River Greenway Commission, Rachel Taylor and Catherine Eaton spoke with local high school students about WNY PRISM, invasive species management and current and future opportunities to get involved.

- The Watercraft Inspection Stewardship Program achieved an 87.2% acceptance rate with 858 interceptions – the most encountered species were Eurasian watermilfoil (344) and curly pondweed (305).
- Stewards conducted 393 Walk-Up Surveys and 362 Angler Surveys, interacting with 1,456 community members.
- Terrestrial early detection survey and management was carried out at 23 sites encompassing 310.9 acres, with surveys of "high probability areas" totaling an additional 921.62 acres.
- Aquatic early detection surveys and management was carried out at 7 sites, resulting in 492 acres surveyed and 23.1 acres managed – 1 site was eradicated and 2 new sites reported.
- The Crew Assistance Program received 15 proposals from 12 partners and resulted in 11 completed projects, including 174.8 acres surveyed and 19.78 acres treated.
- Facilitated WNY Water Chestnut Working Group and assisted with survey and removal efforts – WNY PRISM surveyed a combined 529.3 acres and removed 16 bags across multiple sites.

Additional Projects

East Canal Ecological Renovation at Tifft Nature Preserve (2023 – 2026)

The East Canal Ecological Renovation Project involves 24 acres of riparian and shoreline habitat along the East Canal, which will be renovated through intensive management of invasive plants, and thoughtful, comprehensive revegetation efforts. This project is an extension of previously completed work and will leverage and protect the ecological outcomes of earlier projects by improving plant community structure and species diversity, and by aiding in the replacement of the existing riparian tree canopy with a new and more diverse cohort of trees.

In 2025, WNY PRISM assisted with activities including native planting and invasive species removal using foliar and cut stump treatments and worked with Project Manager Zach Goodrich on project planning and coordination of field efforts. Invasive species removal efforts focused on bush honeysuckle (*Lonicera spp.*), common buckthorn (*Rhamnus cathartica*), glossy buckthorn (*Frangula alnus*), multi-flora rose (*Rosa multiflora*), tree of heaven (*Ailanthus altissima*), and knotweed (*Reynoutria spp.*), while restoration efforts included native

planting of American basswood trees and the organization and construction of tree cages.

Collaboration

WNY PRISM staff participate in and/or facilitate several local, statewide, and regional collaboratives to better provide support for the region we serve:

- Buffalo State Arbor Day Committee
- Coastal States Organization – Lake Erie Watershed
- Eighteen Mile Creek Technical Advisory Committee
- Erie Canal Bicentennial Voyage Outreach Committee
- Great Lakes Action Agenda
- Great Lakes Environmental Sciences Professional Science Masters Advisory Board
- Great Lakes *Hydrilla* Collaborative
- Great Lakes *Phragmites* Collaborative
- Great Lakes Slender False Brome Working Group
- iMapInvasives Terrestrial Spatial Prioritization Advisory Group
- iMapInvasives Tier Ranking Working Group
- iMapInvasives Tools Planning
- Invasives Crayfish Collaborative
- NYS Aquatic Coordinators Working Group
- NYS *Hydrilla* Task Force
- NYS PRISM Education and Outreach Committee
- NYS Terrestrial Coordinators Working Group
- Niagara Beautification Commission – Stronger Together In 2025
- *Phragmites* Adaptive Management Framework
- Spotted Lanternfly Monitoring Group – AGM
- Swallow-wort Research Group
- Watercraft Inspection Stewardship Program App (WISPA)
- Watercraft Inspection Stewardship Program Manual Update
- WNY Hemlock Woolly Adelgid Collaborative
- WNY Mile-A-Minute Working Group
- WNY PRISM Aquatic Working Group
- WNY PRISM Education and Outreach Working Group
- WNY PRISM Terrestrial Working Group
- WNY Water Chestnut Working Group

WNY PRISM Steering Committee Members

- Sharon Bachman, Cornell Cooperative Extension of Erie County
- Megan Cochran, New York Sea Grant
- Aaron Heminway, New York State Office of Parks, Recreation and Historic Preservation
- Colleen Keefer, U.S. Fish and Wildlife Service – Lower Great Lakes Fish and Wildlife Conservation Office
- Jenny Landry, New York State Department of Environmental Conservation
- Leslie Moma, New York State Department of Transportation
- Christopher Pennuto, SUNY Buffalo State University
- Richard Ruby/Mike Voorhees, U.S. Army Corps of Engineers – Buffalo District
- Mike Shaw, U.S. Department of Agriculture – Natural Resources Conservation Service
- Jonathan Townsend, Royal Fern Nursery

Presentations, Workshops, and Trainings

1. Taylor, R., E. Yousey, and G. Camarata. Walk and Talk: Audubon Community Nature Center, WNY PRISM, Jamestown, NY, July 12, 2025.
2. Locke, A., and R. Taylor. Walk and Talk: Chautauqua Institution, Chautauqua Bird, Tree and Garden Club, Chautauqua, NY, August 4, 2025.
3. Taylor, R., N. Harper, and T. Gutierrez. Walk and Talk: Nike Base Park, WNY PRISM, Grand Island, NY, August 16, 2025.
4. Taylor, R. Reporting Invasive Species with the iMapInvasives Mobile App, Mile-a-Minute Community Meeting, WNY Mile-a-Minute Working Group, Alabama, NY, September 23, 2025.
5. Eaton, C., G. Koplun, K. Amantangelo, and R. Taylor. Ecology and Management of Mile-a-minute, Mile-a-minute Community Meeting, WNY Mile-a-Minute Working Group, Alabama, NY, September 23, 2025.

6. Taylor, R., and C. Eaton. Walk and Talk: Moss Lake Preserve, WNY PRISM, Houghton, NY, September 27, 2025.
7. Locke, A., C. Eaton, N. Farese, and R. Taylor. Program Updates, WNY PRISM Fall Partner Meeting, WNY PRISM, Buffalo, NY, October 16, 2025.
8. Locke, A., and R. Taylor. WNY Tonight Interview, Lockport Community Television, Lockport, NY, January 7, 2026.
9. Taylor, R., and C. Eaton. Hemlock Woolly Adelgid Hunter Training, WNY PRISM, North Java, NY, January 17, 2026.
10. Taylor, R., and C. Eaton. Hemlock Woolly Adelgid Stand Assessment Training, WNY PRISM, North Java, January 17, 2026.
11. Eaton, C., and R. Taylor. Environmental Ambassadors Summit Round Robin, Niagara River Greenway, Tonawanda, NY, February 10, 2026.
12. Locke, A. Invasive Species and Gardens, Town & Country Garden Club, East Amherst, NY, February 12, 2026.
13. Eaton, C. Neighbors in Nature: The Essential Role of Private Landowners in Early Detection Rapid Response, Rural Landowners Workshop, Yorkshire, NY, March 7, 2026.
14. Locke, A. Birds and Invasives, Rural Landowners Workshop, Yorkshire, NY, March 7, 2026.
15. Locke, A. Program Updates, WNY PRISM Spring Partner Meeting, WNY PRISM, Fredonia, NY, April 16, 2026.
16. Taylor, R., N. Agarwal, and I. Siudzinski. How to Clean. Drain. Dry. to Prevent the Spread of Aquatic Invasive Plants, Niagara County Environmental Field Days, Gasport, NY, June 3, 2026.
17. Taylor, R. Trail Survey Training, WNY PRISM, Castile, NY, June 6, 2026.
18. Eaton, C., and J. Konovitz. Walk and Talk: Akron Falls Park, WNY PRISM, Akron, NY, June 9, 2026.
19. Locke, A. Invasive Species and the Impact of Management, Erie County Environmental Management Council, Buffalo, NY, June 16, 2026.
20. Eaton, C. Terrestrial Management Workshop: Vegetative Reproduction, Impacts and Management Strategies, WNY PRISM,



Rachel Taylor led a Trail Survey Training for community scientists at Letchworth State Park. Participants learned how to identify a selection of common and early detection priority invasive species, how to use the iMapInvasives app to report them and how to conduct surveys along trails.



Rachel Taylor led a volunteer workday at Letchworth State Park with the help of WNY PRISM staff members, Sam Parelius (pictured, second from left), Izzy Maher, Whitney Pierot and Nandini Agarwal.

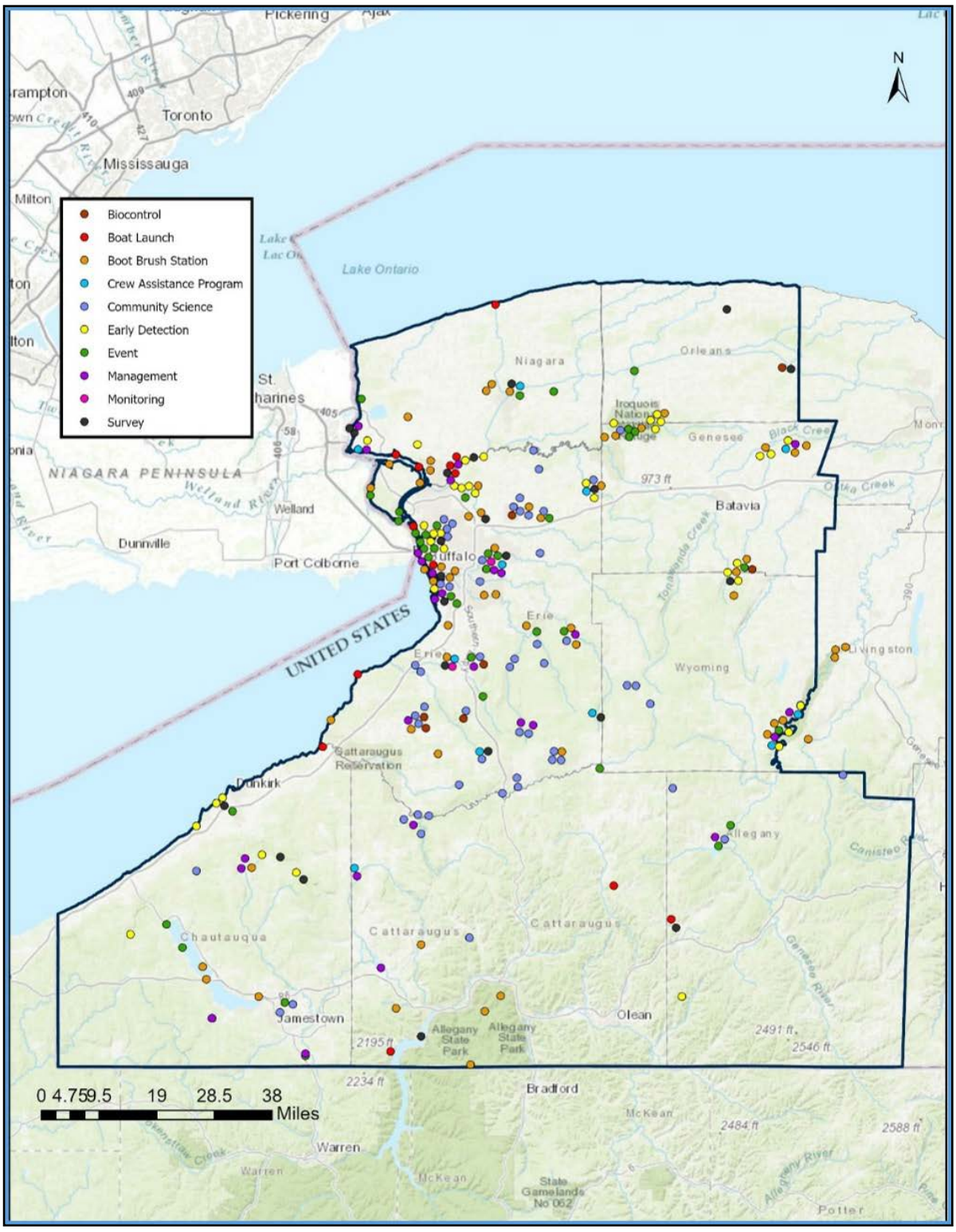


Volunteers removing invasive plants at the volunteer workday at Letchworth State Park. Six bags of the invasive grass, slender false brome were removed from 0.68 acres within the Inspiration Point area of Letchworth.

Amherst, NY, June 18, 2026.

21. Farese, N. Aquatic Management Workshop: Planning for Long-term Pond Management, WNY PRISM, Buffalo, NY, June 18, 2026.
22. Locke, A. Taming the Monsters in Your Backyard, Grand Island Nature Alliance, Grand Island, NY, June 23, 2026.

Visit our website for more information about WNY PRISM..



WNY PRISM – Where We Worked

