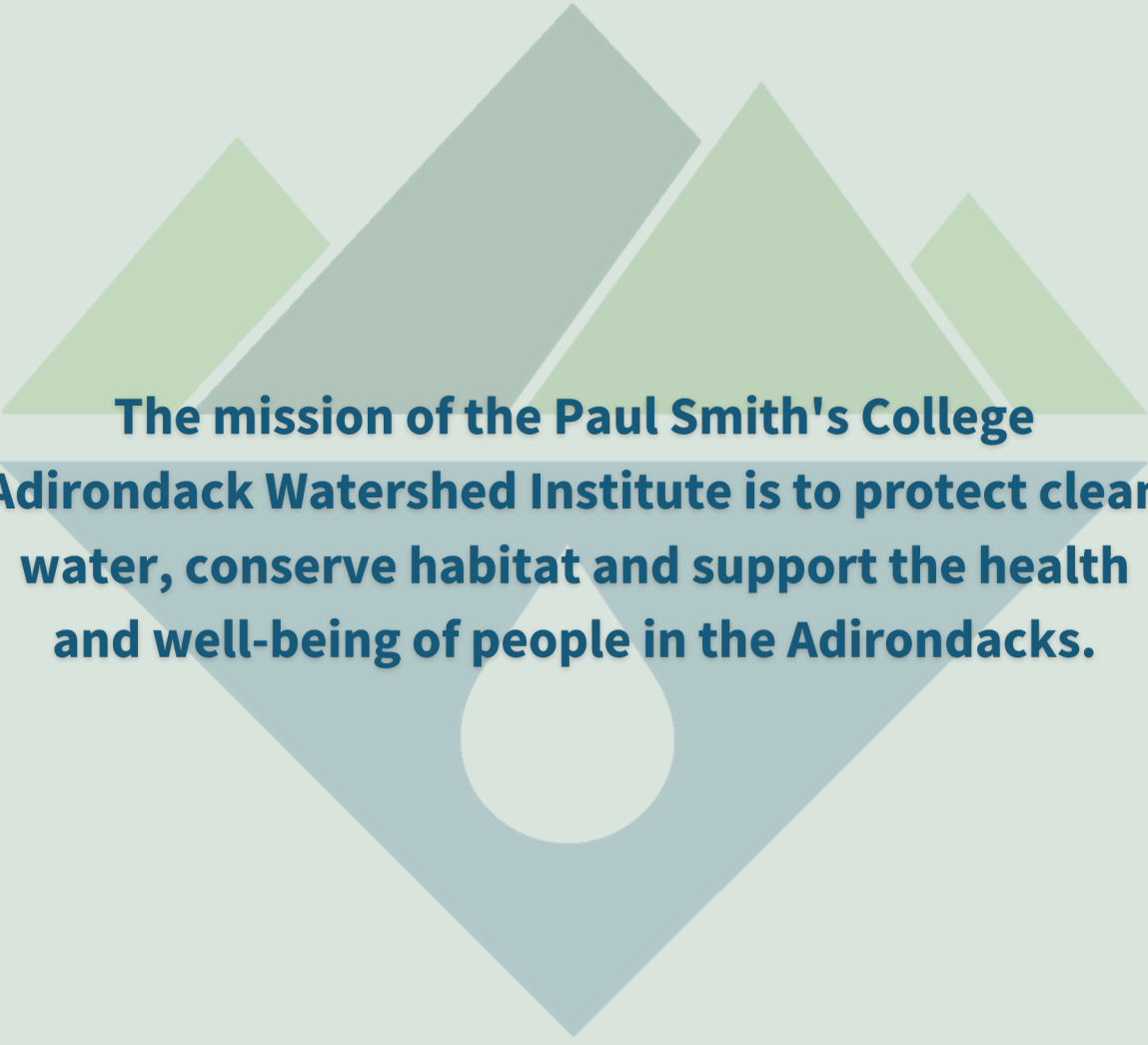


PAUL SMITH'S COLLEGE ADIRONDACK WATERSHED INSTITUTE

2023 ANNUAL REPORT



PAUL SMITH'S COLLEGE
ADIRONDACK
WATERSHED
INSTITUTE



**The mission of the Paul Smith's College
Adirondack Watershed Institute is to protect clean
water, conserve habitat and support the health
and well-being of people in the Adirondacks.**

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Cover photo: Image of AWI Research Technician II, Hunter Favreau, and AWI Executive Director Zoë Smith sampling on a lake enrolled in the Adirondack Lake Assessment Program (ALAP).

Images in this document belong to AWI, unless otherwise noted.

Dear friends,

I am pleased to present our Annual Report for 2023, highlighting our continuous efforts to protect clean water in the Adirondacks and beyond.

The Adirondacks, with its abundant waterways and forested landscapes, play an important role in shaping the future of New York State. What we learn here can serve as a model across the state for policies, practices, and stewardship efforts aimed at protecting our natural resources.



Last year AWI was fortunate to contribute to several statewide efforts that protect open space, support climate resilience, and protect our waterways in New York State. I am excited to share these stories with you in our Annual Report.

A notable accomplishment is the publication of the Adirondack Road Salt Reduction Task Force Report, released in September 2023. The Adirondack Watershed Institute played a crucial role as both a scientific contributor and an active member of the Task Force. For decades, AWI has been an important resource for understanding the impact of road salt application on water quality in the Adirondacks and we remain dedicated to amplifying the impact of the Task Force Report through science, outreach, and advocacy.

I am also delighted to welcome several new staff members to our team, who are featured on page nine. Their expertise and dedication play an important role in advancing our mission and achieving our goals. We hope you have the opportunity to meet them and see firsthand the commitment they bring to AWI.

Finally, I would like to thank you for your contributions to our work. You are our boots on the ground, our champions in your communities, our volunteers on the lakes, and our partners in safeguarding the resources that define the beauty and resilience of the Adirondacks.

Together, we are not only protecting clean water in the Adirondacks but also setting a precedent for conservation efforts statewide. Your support and collaboration enable us to continue these important efforts. If you would like to contribute to our ongoing work, please consider making a donation today. Together, we can make a difference.

Thank you for your generosity.

Warm regards,

A handwritten signature in black ink that reads "Zoë Smith". The signature is stylized and cursive.

Zoë Smith, Executive Director

2023 Highlights



69,971

watercraft inspected to prevent spread of invasive species



3,367

people reached through community outreach



189

lakes and ponds monitored for water quality



24,459

water samples analyzed in our NYS certified research lab



200

staff and volunteers trained to protect clean water



897

students and teachers educated

Funding and Donors

FY23 Revenue (\$3,854,261)

- State
- Lake Association, Municipal, & NGOs
- Federal
- Private Individuals & Foundations



A significant portion of AWI's revenue comes from contracted work with state partners, federal agencies, lake associations, municipalities or other non-profits. However, private donations are critical to our work and allow us to allocate funds where it is most needed, such as creating new programs, reaching new audiences, crafting creative initiatives, and leveraging other monies. Individual gifts from our community give us flexibility to further our mission and strengthen our impact. Thank you for your generosity.

Charitable Gifts from Foundations and Associations

Adirondack Foundation
Augur Lake Property Owners Association, Inc.
Black Lake Association
East Shore Schroon Lake Association, Inc.
Evergreen Foundation
Henry Uihlein II and Mildred A. Uihlein Foundation
Jewish Federation Foundation of Greater Rhode Island
Mirror Lake Watershed Association
Northern New York Audubon, Inc.

Nuttall Ornithological Club, Inc.
Overhills Foundation
Protect the Adirondacks!
Raquette Lake Preservation Foundation, Inc.

Individual Donors

Milton and Christine Adams
A. Joseph Armstrong
Larry and Deborah Athens
Bruce Bancroft
Lisa Baron
Nancie Battaglia
Alan Beideck
Arthur and Sandy Bissell
Rosemary and Dale Bluman
Lee Borland
Noel Cacchio
Ellen Collins
George and Ann Colony
Adele and Tom Connors
Anonymous
Ray Curran and Kathy Daggett
James Davidson and Mary Untalan
Kevin Davis
John Deasy
Joseph and Mary Deignan
Michael DiNunzio
Betsy Dirnberger
Steve and Catherine Donaldson
Caren Donovan
Nevton Dunn
George Earle V.
Stephen Elers

Yvonne Fast
Peter Fieldstein
David Filsinger and Susan Nolde
Frederick Findlay
Steven Frederick
Roger and Myriam Friedman
Michale and Robert Glennon
Joan Grabe Family Fund
Mary Ann Goddard
Tony Goodwin
William Grabe
Robert Hall
Joseph Hancock
Robert Holder
Sheila Hutt
Barbara Rottier and Richard Jarvis
Ellen Jones
Georgia Jones
Thomas Jorling
Sheila and Edwin Kelly
Daniel Kelting
Lewis Kinter and Terry Timberlake-Kinter
Terry-Timberlake Kinter
Joel Kolker and Anne Sheerin
Tom Langen and Esther Oey
Marta Jo Lawrence

Scott vanLaer
David Mandelbaum
Christopher May
Paul and Rhoda Morrisroe
Mary Moxham
Jen Ortiz
Peter O'Shea
Meredith Prime
Brian Ruder
Leonard Schantz
Garrett Schniewind
Curtis Schwartz
Laurel and Michael Skarbinski
Jeff and Heidi Serbalik
Craig and Ruth Smith
James and Susan Smith
Thomas Sopchak
Jon and Jean Strauss
Elizabeth and Edward Thorndike
Ned and Margot Timbel
James Townsend
Martha Van der Voort
Richard and Alexia Walka
Mary Jane Watson
Thomas and Patricia Willis
Brendan Wiltse

Water Quality Programs

In 2023, the AWI Science team continued to produce valuable data to help support the health of our beloved Adirondack waterbodies. Through long-term monitoring, detailed action plans, and community-based science, AWI produces robust data that helps drive decisions to protect clean water. To enhance our work, and support student engagement, we also worked closely with Paul Smith's College undergraduate students, who developed their capstone projects and made significant contributions to our research laboratory.

This year's major milestone was winning a five-year contract from the New York State Energy Research and Development Authority (NYSERDA) to conduct fieldwork for the Adirondack Long-Term Monitoring program (ALTM). This monitoring program was established in 1982 to assess the impacts of acid rain and monitor recovery after the passage of the 1990 Clean Air Act amendments. AWI is bringing new resources to the program to help pivot toward creating a better understanding of the impacts that climate change is having on our watersheds. To conduct this research, our team traveled to the field sites by ski, truck, snowmobile, ATV, mountain bike, and foot, reaching some of the most remote waterbodies in the Adirondack Park.



Image above: Chief Scientist, Brendan Wiltse, Ph.D hiking to a sampling location for the Adirondack Long-Term Monitoring Program.



Image above: AWI Research Associate, Lija Treibergs, Graduate research Assistant, Mikala L'Hote, and Chief Scientist, Brendan Wiltse, Ph.D at the North American Lake Management Society Symposium held in Erie, PA.

AWI also enhanced their ability to monitor and research Harmful Algal Blooms (HABs) on Adirondack Lakes. Initial funding from the North Elba Local Enhancement and Advancement Fund allowed AWI to purchase equipment for toxin testing, with launching a 5-year, one-million-dollar fundraising effort to support HAB monitoring, research, and response in the Adirondack Park. In 2023, just under 1,500 samples were received in the AWI laboratory, marking one of the highest sample counts to date, with a total of 24,459 subsamples analyzed across all laboratory parameters. This data is used to inform decisions, drive management action, and assists with long-term protections that benefit both natural and human communities.

Updates from the Uplands

Image right: Senior Research Scientist, Michale Glennon, Ph.D. collecting data from a trail camera.

Many problems in our waters originate with choices made on the land. Our work in the terrestrial environment is focused on ensuring the intactness and ecological integrity of the upland and wetland habitats that surround our lakes, ponds, and rivers. Wildlife are key indicators of ecological health and excellent ambassadors for stewardship of all habitats. Our work in 2023 continued to build on long-term monitoring programs that help us to understand and protect Adirondack faunal communities and the habitats on which they depend.

Year 5 of working with the Uihlein Foundation on grassland management in Lake Placid helped us to provide recommendations for safeguarding these regionally important habitats for birds which are otherwise scarce in our part of the park.



Image above: Great Blue Heron captured on one of AWI's trail cameras. This data is used to inform best practices for land and watershed management.

Similarly, our continued work to monitor boreal birds in Adirondack peatlands has identified steep declines among these northern species and highlighted the vulnerability of their wetland habitats to climate change and other threats. In 2023, we provided a major report to the New York State Department of Environmental Conservation on the status and trends of 9 boreal bird species, areas of critical habitat in the park and their relative protection status, best management practices for protecting peatlands, and potential gaps in existing wetland protections in the Adirondack Park. This information is now being used in the process of updating New York's State Wildlife Action Plan; these critical documents, drafted and revised by each state every 10 years, serve as the blueprints for conserving our nation's fish and wildlife and preventing endangered species.

In 2023, our scientific contributions in the Adirondacks resulted in invitations to contribute to two additional statewide initiatives. The New York State Open Space Conservation Plan addresses 4 major objectives of promoting outdoor recreation, addressing climate change, ensuring clean water, air, and land for a healthy public and vibrant economy, and protecting, using, and conserving our natural resources and cultural heritage. We are honored to serve on the Advisory Committee for DEC Region 5. Similarly, the New York State Climate Impacts Assessment is a comprehensive appraisal of how climate change will affect New York State and how we can build a more resilient future. We served on the Ecosystems advisory group and helped ensure that AWI science is represented in this report. We appreciate the opportunity to play a role in these important statewide efforts.

Updates on the Road Salt Task Force



Image above: Road salt application, a common winter road maintenance technique in the Adirondacks since the 1980s.

AWI has been at the forefront of understanding road salt impacts on water resources for more than a decade. In September, 2023 the long awaited Adirondack Road Salt Reduction Task Force report was released by New York State. Former AWI Executive Director and now Paul Smith's College President, Dr. Dan Kelting, served on the Task Force. This report represents decades of work by AWI and our partners, particularly AdkAction. Our work on road salt goes back to the early days of the Adirondack Aquatic Institute (AAI), the pre-cursor to AWI. In the mid-1990s, AAI Executive Director, Michael Martin, assembled water quality data from the Adirondack Lakes Survey to map chloride concentrations in lakes across the park. The pattern was clear, lakes and ponds near state roads and urban areas had elevated chloride concentrations.

In 1998, AAI and the Residents' Committee to Protect the Adirondacks (now Protect the Adirondacks!) joined forces to launch the Adirondack Lake Assessment Program. Chloride was one of the analytes included in the program. At this time, other monitoring programs in the state weren't even measuring sodium or chloride concentrations. Early reports from AAI and ALAP recognized the need to study and address road salt pollution in the Adirondacks.

In 2010, momentum began to build and advocates in the park started to voice concerns over impacts to specific waterbodies such as the Cascade Lakes and Lake Colby. AdkAction commissioned AWI to conduct a comprehensive review of the literature related to road salt resulting in the publication of Review of Effects and Costs of Road De-icing with Recommendations for Winter Road Management in the Adirondack Park. This white paper has been cited more than 100 times in the academic literature and led AWI to follow up with several studies of the impact of road salt on the environment. An AWI study published in 2012 documented the regional salinization of surface waters across the Adirondacks and indicated that runoff from state roads accounted for most of this pollution. Soon after, AWI researchers modelled runoff from roads in the park and estimated that 11% of land area, 77% of surface water area, and 54% of stream length in the park may be impacted by road runoff. This modeling also showed that Forest Preserve protections did not prioritize water quality relative to road runoff. We also documented impacts to the natural mixing regime of Mirror Lake, a phenomenon that has rarely been documented in scientific literature.

While our work on lakes and streams was progressing, our research scientists were also noticing troubling trends in high-frequency stream data that suggested widespread groundwater contamination. We were detecting high concentrations of road salt in streams months after salt had been applied, indicating that salt was making its way into our groundwater. In a follow up study, we sampled over 500 private wells across the Adirondack Park and found similar patterns to the surface water salinization we had previously documented. Wells downslope of state roads have significantly higher levels of road salt pollution and a substantial portion are above EPA drinking water guidelines. This work was supported by AdkAction, Cloudsplitter Foundation, and the Lake George Association.

AWI's science is woven throughout the task force report and represents a culmination of decades of work to understand and address the problem of road salt pollution. Road salt is threatening the clean waters of the Adirondacks, including residents' access to clean drinking water. We are well-informed about the best strategies for decreasing our dependence on road salt. Local communities, such as Lake Placid, Washington County, and towns and villages around Lake George have proven that these practices work. Now that the task force report is out, it's time to put the recommendations into action.

AWI stands committed to continuing the monitoring, research, and advocacy we've been focused on for decades to support the protection of clean water and the health and wellbeing of our communities.



Image above: AWI Research Technician III, Connor Vara, collecting data for ALAP.



Image above: PSC President, and former AWI Executive Director, Dan Kelting, Ph.D., with Assemblyman Billy Jones, sponsor of the Randy Preston Adirondack Road Salt Reduction Act, which led to the Task Force formation.

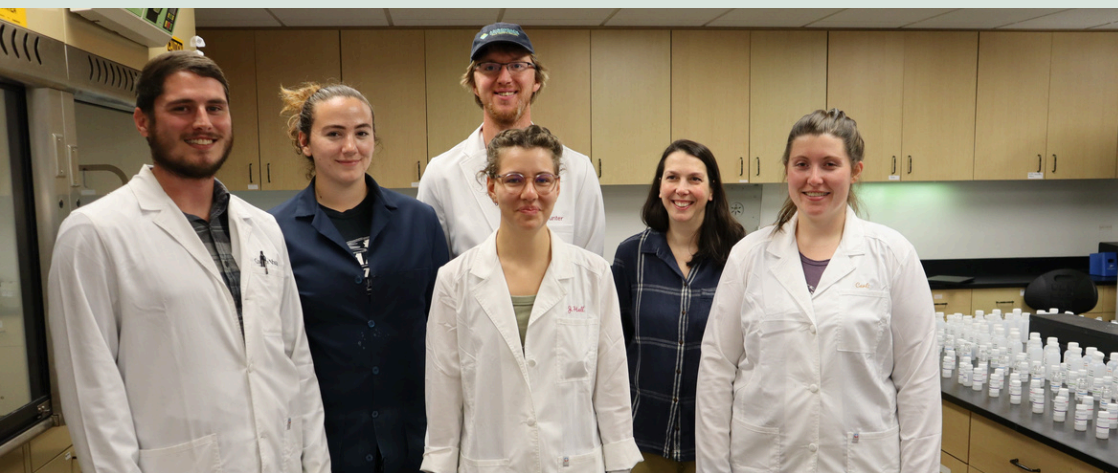


Image left: AWI Research Technician III, Connor Vara, Graduate Research Assistant, Mikala L'Hote, Research Technician II, Hunter Favreau, Laboratory Manager, Joline Hall, Laboratory Director, Elizabeth Yerger, and Research Technician II, Carli Courville pose for an image in AWI's NYS certified research lab.

Stewardship in Action

This year began with the award of a 5-year contract with NYS DEC to continue managing the Adirondack Park Aquatic Invasive Species Spread Prevention Program with 53 sites and over 100 Watercraft Inspection Stewards. Since 2018, AWI has engaged with over one-million people at boat launches throughout the park and we look forward to continuing the work with our partners to protect water quality.

For Watercraft Inspection Stewards, Memorial Day weekend is the beginning of their season following a two-week training period. Many boaters are launching their boats on the holiday weekend and visiting the Adirondacks for the first time that season. This past May, a boater coming from Oneida Lake was eager to get out and enjoy the day on Fourth Lake, in Inlet. Steward Aiden Gifford inspected the boat and noticed zebra mussels (*Dreissena polymorpha*) attached to the motor.

Image below: Watercraft Inspection Steward performing a decontamination on a boat and trailer to ensure the boat meets NYS clean, drain, dry standards.



Image above: zebra mussels, (*Dreissena polymorpha*) are an invasive mollusk that is characterized by its “D” shaped shell, with a distinctive zigzag stripe pattern.

Zebra mussels are an invasive species that initially arrived in the Great Lakes region in the 1980s and have since spread to the Finger Lakes region and Lake Champlain. These filter feeders can negatively impact aquatic environments as they filter out native algae that other organisms depend on, ultimately changing the transparency of the water column and leading to cascading impacts on the aquatic environment. These organisms attach to boats and equipment using byssal threads, small root-like proteins that allow them to attach. Aiden acknowledged that this boat wasn't up to NYS Clean, Drain, Dry standards and recommended the boater receive a decontamination down the road at the Rocky Mountain boat wash station. Steward Steve Dunckel proceeded to remove the zebra mussels on the boat before sending the boater back to the Fourth Lake launch. Success stories like this remind us of the importance of our work in preventing the spread of invasive species and the value that our stewards bring to protecting Adirondack waters.

Growing Our Team

In 2023, we were delighted to welcome five new employees to our team.

Jennifer Denny, Stewardship Program Manager

Jen is a graduate of Paul Smith's College with a B.S. in Environmental Science and a M.S. degree in Environmental Studies and Sustainability from Unity College. With experience in managing multi-day education programs, public presentations, and guiding, Jen's focus at AWI is on recruiting, training, and providing ongoing support to our Watercraft Inspection Stewards and Regional Supervisors. During her free time, Jen loves to be out hiking, paddling, or skiing with her friends and family.



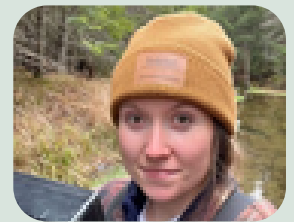
Peter Murphy, Watercraft Decontamination Program Manager

Peter earned his B.S. degree in Ecological Forest Management from Paul Smith's College. Originally joining AWI in 2016 performing lake surveys and later a member of the aquatic invasive species management dive team, Peter's primary role is ensuring the smooth operation of decontamination equipment while providing training and support to Watercraft Inspection Stewards. In his free time, he raises farm animals and enjoys foraging along with an assortment of other outdoor activities.



Carli Courville, Research Technician II

Carli began working at AWI in 2021 as a seasonal decontamination technician for our stewardship program and returned the following year for a seasonal position after earning a B.S. in Biology from SUNY Empire State College. Carli now supports our long-term water quality monitoring programs, helping analyze data, collect samples, and assist with the development of Paul Smith's College students working with our team. When she's not in the lab or in the field, Carli enjoys spending her free time outside either birding, kayaking, or snowshoeing.



Hunter Favreau, Research Technician II

Hunter is a graduate of Paul Smith's College, receiving a B.S. in Environmental Science in 2016. He previously worked as a Watercraft Inspection Steward and Research Technician with AWI, a research technician for the University of New Hampshire, and a quality analyst for a local pharmaceutical testing laboratory. Hunter works in the laboratory and in the field, collecting water samples from across the region. His recent endeavors have involved raising twin three-year-old girls and woodworking.



Mikala L'Hote, Graduate Research Assistant

Mikala joined AWI in 2023 researching landscape-level drivers of sodium and chloride within the Lake Champlain Basin as it pertains to large-scale impacts of road salt application. With a B.A. in Environmental and Urban Studies from Bard College, Mikala is currently pursuing a M.S. degree in Natural Resources Conservation at Paul Smith's College. In her free time, she enjoys being outside, playing volleyball recreationally, and visiting family and friends.



Community



The Next Generation of Lake Stewards

Image above: Watercraft Inspection Steward instructing participants in the Town of Caroga's summer youth program on how to inspect watercraft to prevent the spread of AIS.

Looking back on the accomplishments of 2023, there are many moments that remind us of why we do this work. In early 2023, we received a call from Marcus Harazin, President of the Canada Lakes Conservation Association. Marcus reached out in hopes of bringing the Junior Watershed Steward program to the Town of Caroga's summer youth program. Designed like a Junior Naturalist program, the Junior Watershed Steward program educates youth aged 7-12 on the importance of their local lakes and ponds and what they can do to help protect them.

Forty-five youth from Caroga's summer program took part in interactive sessions with our hands-on watershed model and exploration of aquatic plant and animal specimens. AWI Educator Kayla Beck and Regional Supervisor Chris Gauthier led the kids through plant identification, water quality lessons, inspecting and decontaminating boats, and other fun activities that conveyed the importance of protecting local lakes. Strengthening community partnerships requires collaboration with entities such as the Canada Lakes Conservation Association and similar organizations. This collective endeavor serves to empower the next generation of Adirondack lake stewards, ensuring the protection of these vital ecosystems.



Image above: Students at the Adirondack Youth Climate Leadership Retreat in Lake Placid, NY participating in a water quality workshop in collaboration with the Finger Lakes Institute.

Elevating Community Organizations

To protect clean water in the Adirondacks, it takes an entire park of committed organizations, leaders, and individuals. The 2023 celebration of Adirondack Water Week commemorated AWI's 30-year history by celebrating those who ensure a future that includes healthy watersheds for Adirondack communities. In recognition of these efforts, we awarded Friends of Moody Pond with the first Adirondack Watershed Award.



Image above: AWI works with many dedicated partner organizations and community members to achieve the mission of protecting clean water in the Adirondacks.

Friends of Moody Pond is committed to preserving and protecting Moody Pond and the surrounding neighborhood as a treasured resource for the enjoyment of the Saranac Lake community. We have witnessed the incredible grassroots effort the organization has undertaken to remove Eurasian watermilfoil (EWM) from the pond. We are particularly proud of their tireless advocacy and fundraising including door-to-door outreach, discussions, sharing stickers or t-shirts, holding information sessions, and their annual ice-cream social. Friends of Moody Pond has built a successful model of stewardship in the community of Saranac Lake.

We are fortunate to work with community organizations similar to Friends of Moody Pond across the Adirondacks in an effort to protect Adirondack waters for future generations. To learn more about Friends of Moody Pond, listen to our podcast Puddle Jumpers by visiting www.adkwatershed.org/blog.

Image below: Friends of Moody Pond representatives Tristan Glanville, Susan Rdzaneck, Jay Federman, along with AWI Executive Director Zoë Smith, with the inaugural Adirondack Watershed Award.



Our Team



Front Row (left to right)

Brendan Wiltse, Ph.D., Chief Scientist

Joline Hall, Lab Manager

Zoë Smith, Executive Director

Tom Collins, Education and Outreach Program Manager

Jennifer Denny, M.S., Stewardship Program Manager

Back Row (left to right)

Sue O'Reilly, Operations Manager

Brett Wimsatt, Aquatic Invasive Species Program Director

Connor Vara, Research Technician III

Peter Murphy, Watercraft Decontamination Program Manager

Hunter Favreau, Research Technician II

Heather Coleates, Program Analyst

Bill Brosseau, M.S., Associate Director

Michale Glennon, Ph.D, Senior Research Scientist

Mikala L'Hote, Graduate Research Assistant

Lija Treibergs, M.S., Research Associate

Stephanie Rock, M.S., Watershed Science Communication Fellow

Elizabeth Yerger, Laboratory Director

Not Pictured

Carli Courville, Research Technician II

“I want to thank the Adirondack Watershed Institute for providing a Junior Invasive Species Steward training session for forty-five children in the Town’s summer youth program...we take invasive species removal and prevention very seriously and appreciate the important work that you do. Hopefully, the learnings will help the next generations of residents continue to keep our Town lakes free and clear of invasive species.”

.....
Canada Lakes Conservation Association



"For 25 years the Adirondack Watershed Institute has provided critical research and analysis on the impact of nutrient loading and road deicers within the Blue Mountain Lake watershed. This invaluable insight has guided the Blue Mountain Lake Association's ongoing efforts to protect the long-term health of our waters and we are ever thankful to AWI for their partnership with us."

.....
Blue Mountain Lake Association



Help us protect Adirondack waters.



www.adkwatershed.org/give



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Image above: Research Associate, Lija Treibergs, and Laboratory Manager, Joline Hall, heading to a sampling location.