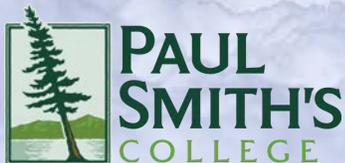
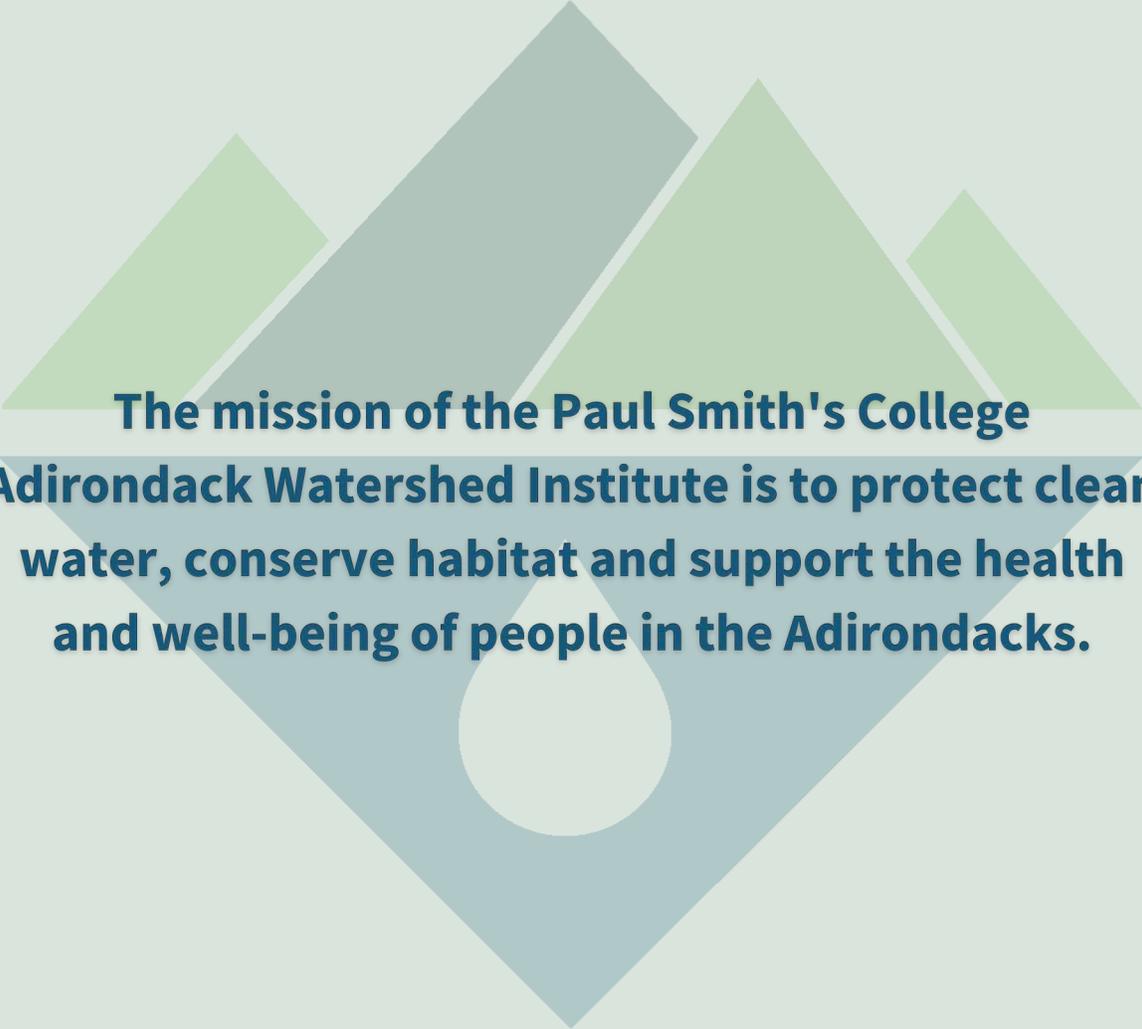


2022 ANNUAL REPORT



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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Dear friends,

This past year I had the honor of moving into the role of Executive Director of the Adirondack Watershed Institute. Building upon the foundation laid by exceptional leaders before me, I am privileged to carry forward the legacy of this work.

Today I am delighted to present the inaugural Annual Report of the Adirondack Watershed Institute, which showcases the accomplishments we achieved together in 2022. Within this report, you will discover highlights from our three program areas: Science, Stewardship, and Community.



It brings me great joy to share with you the positive impact we have made in the Adirondacks last year, from protecting our waterways to conserving our wildlife. We recognize that each of these accomplishments is not possible without the participation and dedication of our trusted partners and community members.

This report also marks an important milestone - the beginning of the 30 year history of the Adirondack Watershed Institute at Paul Smith's College. This milestone lets us reflect upon the progress we have made as a region and reminds us of the commitment we share in safeguarding the region's precious water resources.

We express our gratitude to our funders for their support in preserving clean water and healthy watersheds in the Adirondacks. Special thanks go to individuals who understand the significance of this work and provide support through individual giving.

I hope you enjoy our first Annual Report and thank you for your collaboration and continued commitment to this work. It is through the strength of our partnerships and the passion of our supporters that we can create a lasting positive impact on the Adirondack region.

I look forward to continuing to work alongside each of you in 2023 and beyond.

With heartfelt appreciation,

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

Zoë Smith, Executive Director



550

k-12 students educated
in watershed science



68,083

watercrafts inspected to
prevent the spread of
aquatic invasive species



180

lakes and ponds monitored
for water quality

2022 HIGHLIGHTS

300

seasonal staff and
volunteers trained to
protect clean water



180,000

members of the public
empowered with information
to protect clean water



20

school districts working
in partnership to inspire
youth



Funding and Donors

FY23 Revenue (\$3,854,261)



Donors

Anonymous	Kevin Davis
A. Joseph Armstrong	North Elba Local Enhancement & Advancement Fund
Adele & Tom Connors Fund	Lee Borland
Arthur and Sandy Bissell	Lewis and Sheila Rosenberg
Augur Lake Property Owners Association, Inc.	Marion Weaver
Barbara and Richard Jarvis	Mary Jane Watson
Betsy Dirnberger	Mary Moxham
Black Lake Association	Michael DiNunzio
Baobab Fund	Michale Glennon and Scott van Laer
Brian and Caren Donovan	Milton and Christine Adams
Christina Holland	Northern New York Audubon, Inc.
Cloudsplitter Foundation	Overhills Foundation
Corbin Charitable Fund	Peter O'Shea
Curtis Schwartz	Protect the Adirondacks!
Dale and Rosemary Bluman	Raymond Curran and Kathy Daggett
Daniel Kelting	Robert Glennon
Ellen Collins	Robert and Charlotte Hall
Emily Tyner	Roger and Myriam Friedman
Evergreen Foundation, Inc.	Ross Whaley
Frederick Findlay	Samuel Freeman Charitable Trust
Georgia Jones	Saratoga Lake Association
Henry Uihlein II and Mildred A. Uihlein Foundation	Sheila and Edwin Kelly
James and Susan Smith	Sheila and James Hutt
Joel Kolker and Anne Sheerin	Stephen Ehlers
John Deasy	Steven Frederick
Jon and Jean Strauss	Tom Langen and Esther Oey
Keith and Christine Trombly	Tony Goodwin
	Yvona Fast

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, innovating new ideas, 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.

Science: Lakes, Ponds, and Beyond

With a profound understanding of the region's unique challenges, AWI utilizes the power of science to understand and protect Adirondack ecosystems. In 2022, our science team celebrated and achieved several milestones that collectively reflect our long-term commitment to protecting clean water in the region. In 2022, we proudly celebrated the 25th anniversary of the Adirondack Lake Assessment Program (ALAP), which is run in partnership with Protect the Adirondacks. ALAP has been instrumental in providing valuable information about watershed health and water quality in the Adirondacks including understanding the detrimental effects of road salt on water quality. This research played a crucial role in the passage of the Randy Preston Road Salt Reduction Act. The success of ALAP is a testament to the dedication of our ALAP volunteers, who have played a vital role in this community science-based program.

Image below: Research Technician Hunter Favreau processing samples in our NYS Certified Environmental Lab.



Image above: Research Technician Connor Vara collecting data on Lower St. Regis Lake.

In April 2022, AWI reached a significant milestone by obtaining Lab Certification through the NYS Department of Health's Environmental Laboratory Approval program. This achievement ensures that the data we generate can be utilized effectively by state and federal agencies. This investment helps communities fulfill their needs for water quality data and advances our environmental stewardship goals.



Image above: Black bear (*Ursus americanus*) captured on a trail camera. Our terrestrial research spans upland forests to boreal wetlands.

AWI is committed to maximizing the impact of our data and science to protect clean water, both locally and globally. We are proactively addressing ongoing challenges like harmful algal blooms and climate change through new programs and upgrades to our lab and field science. This year, AWI was awarded a multi-year contract from the New York State Energy Research and Development Authority for the Adirondack Long-Term Monitoring Program with a refocus on climate change. Additionally, our collaboration with the Global Lakes Ecological Observation Network enables us to contribute to a broader understanding of lake ecosystems and their response to threats worldwide.

Wildlife & Waterways

Many of the challenges faced by our waters are directly linked to what happens on the land. Added capacity in terrestrial ecology has enabled us to expand our efforts across watersheds and bring new efforts into our research portfolio. 2022 marked the completion of a major scientific study on recreation ecology in the Adirondacks, in partnership with the Wildlife Conservation Society and funded by the National Science Foundation.

I've never viewed myself as a scientist. However, I'm always wanting to understand the lands, waters, and communities in greater depth. Becoming a volunteer with ALAP has greatly increased my connection to my local lakes. It has afforded me an opportunity to understand the threats and challenges to this region, and above all, has allowed me to become an active participant in scientific research. I enjoy being able to sample each month and watch the seasons change.

-ALAP Volunteer, Moose Pond

Our scientists also conducted the 17th year of monitoring avian communities of boreal wetlands in 2022. This boreal bird study is one of the longest running and largest such analyses in New York State and has resulted in important information on population trends, critical boreal habitats, and best management practices for the protection of these rare species. With these initiatives, we are driving positive change for clean water and healthy watershed protection.

Stewardship: Stopping the Spread

Once aquatic invasive species become established in a waterbody, eradication costs are often significant. Preventing the initial introduction is the goal of the AWI aquatic invasive species spread prevention program and is addressed through public education, watercraft inspections and decontamination. AWI watercraft inspection stewards have been on the forefront of aquatic invasive species spread prevention in the Adirondacks for two decades, working across 60 priority boat launches and roadside locations in 2022 and engaging with more than 136,800 boaters. The message "Clean. Drain. Dry" urges boaters to clean, drain, and dry their watercraft before launching in order to reduce the spread of aquatic invasive species.

Image below: Three harmful aquatic invasives, Eurasian watermilfoil, curly-leaf pondweed and water chestnut retrieved at the Ticonderoga boat launch on Lake Champlain.



Image above: AWI Watercraft Inspection Steward inspecting a boat for aquatic invasive species.

Lake Champlain: A Focused Approach

With 51 known aquatic non-native and invasive species residing in Lake Champlain, watercraft and recreational equipment are spread vectors on the waterways of New York, Quebec, and Vermont. To address this concern, AWI collaborates with the Lake Champlain Basin Program (LCBP) and NYS DEC, to deploy watercraft inspection stewards at seven launches along the New York State shoreline of Lake Champlain.

In 2022, AWI's Champlain stewards diligently inspected 7,661 watercraft and actively engaged more than 17,000 boaters, emphasizing the threat of aquatic invasive species. Of the watercraft inspected, an average of 4.2% were found to be carrying aquatic invasive species such as Eurasian watermilfoil, curly leaf pondweed, and zebra mussels, the top three species found in the lake.



Image above: AWI Watercraft Inspection Stewards at the Lake Placid state launch. Look for the Blue Vest at your local launch!

In all cases, watercraft inspection stewards strongly recommend a thorough decontamination process involving a high-pressure, high-temperature boat wash to most effectively prevent the spread of aquatic invasive species. Boat wash station locations can be found at adkcleanboats.com.

Science-Based Approach

In 2022, we completed 2 major research efforts to help inform invasive species management. "[Pathways of Invasion](#)" describes ways in which invasive species spread among our lakes and ponds and factors associated with risk of both invasion and establishment. The report assesses lakes on how likely they are to be central players in the transport of AIS. We found that large lakes with amenities such as multiple launches and marinas, that are located in close proximity to major roadways are most at risk for receiving and potentially spreading AIS. High access and significant boat use can also contribute toward the risk of establishment of AIS. We also found that lakes with high native plant community richness and those with hydrologic connections to invaded waters upstream are at high risk for establishment. "[Efficacy of Watercraft Inspection Stewards](#)" helps us understand the factors that contribute to the public's adoption of "Clean. Drain. Dry." (CDD) spread prevention practices. One key finding was that most boaters have encountered a boat steward before; the proportion of those reporting having met a steward rose from 86% to 93% between 2015 and 2020. Not surprisingly, we also found that boat stewards have been highly effective in reaching a very broad audience across the Adirondack region, providing critical education in terms of CDD practices, and enhancing the adoption of these practices by boaters.

I am grateful to be connected to the resources I care about here: the watershed ecosystem, local community, regional economy, and seasonal culture. Stewardship is powerful; it protects by inclusion and can shift human behavior through fostering respect. Each day, in my own small way, I enact positive change through engagement in the conservation of the area's watersheds. That is ultimately why I love being a steward and find this work so meaningful. It is a legacy of which I am proud to be a part.

-Rory Fraser, AWI Regional Supervisor

Community: Connecting Others to Clean Water



Image above: Educator Tom Collins leading a water sampling workshop for local educators.

2022 marked the celebration of the 50th Anniversary of the Clean Water Act. Highlighting this milestone during the 3rd annual Adirondack Water Week, nearly 1,000 people engaged in AWI programs and events throughout the Adirondacks. This event fosters a sense of place and raises awareness about the importance of protecting clean water.

Nearly 550 students from more than 20 school districts were reached in 2022 through our youth programs. Elementary students reflected on their role in their watershed through our interactive watershed model. Kids ages 7-12 learned about the threat of invasive species through our Junior Watershed Steward Program. High school students explored the impacts of climate change on our water ways through Youth for Water and Climate Action, a new collaboration with the Finger Lakes Institute. Additionally, our Water Shield Workshops offered engaging lessons in lake ecology to high school students in the region.



Image above: Students learning about lake ecology on Lower St. Regis Lake.

Stitching Water's Story

Science alone cannot capture the hearts and minds of our community. Our collaborative art and science project, Wool and Water, has become a powerful tool for visualizing watershed science. Crafters from across the Adirondack Park have created unique data and fiber art pieces that symbolize the challenges faced by our watersheds. With over 60 pieces created by more than 20 makers, the Wool and Water collection has been showcased at more than 12 locations in Northern New York, including art galleries and college campuses. Wool and Water is now integrated into elementary and high school curriculum, fostering water and climate education through the arts. These creations invite curiosity and foster a deeper connection between our community and the water quality challenges we face.

Image below: Transparency is a collaborative piece created as part of the 2022 Adirondack Youth Climate Summit at The Wild Center, depicting long-term trends in lake transparency in several Adirondack lakes.



Image right: Lake Champlain Ice Scarf. This scarf depicts the ice record on Lake Champlain, with each row a year between 1816 and 2019. Blue rows indicate years in which the lake did not freeze.



Image above: Michale Glennon, Ph.D. wearing Greta, a piece representing global temperature anomalies. (Image: Rick Godin)

Our Headwaters: 30 Years of Protecting Clean Water

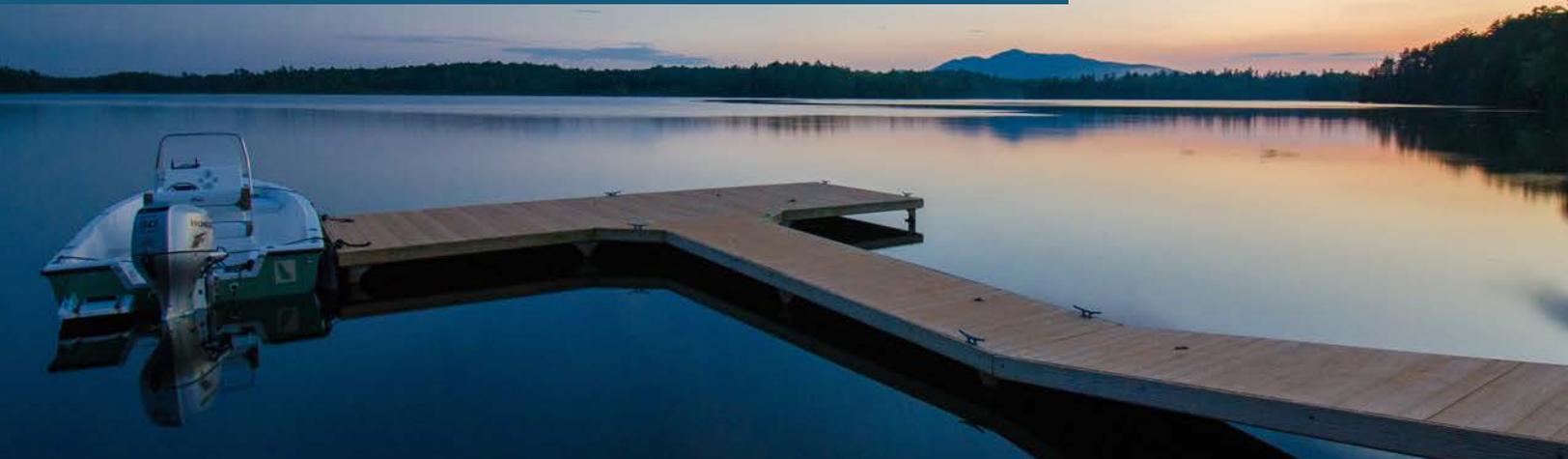


Image above: Looking towards St. Regis Mountain from the campus of Paul Smith's College.

In the early 1990s, a fortuitous encounter at a lakes conference held at Paul Smith's College changed the course of water quality awareness in the Adirondacks. Michael Martin, a limnologist specializing in aquatic ecology, presented his research on lake management and water quality protection. Molly Sheren, Richard Handler, and Charlie Ritchie from the Upper Saranac Lake Association approached him seeking help to understand a lake-wide harmful cyanobacteria bloom occurring on the lake. Michael was subsequently hired, and during one of his trips, he expressed a desire to be based in the Adirondacks year-round. Charlie seized the opportunity and proposed establishing a scientific institute on Paul Smith's College campus, focusing on water quality issues.

We spoke with Michael during a lunch at Paul Smith's College early in 2023. He shared with the AWI team the complex challenges Adirondack lakes faced in the early 1990s. "At that time, there was a lack of comprehensive monitoring and water quality data for Adirondack lakes," explained Michael. "However, local and regional planners needed to make critical decisions affecting water quality, such as addressing the cyanobacteria bloom on Upper Saranac Lake, but didn't have the resources they needed to take action."

Recognizing this gap, the establishment of Adirondack Aquatic Institute became crucial to expand local capabilities and provide insights into the human activities impacting our lakes and rivers.

AAI's inaugural initiative, the Adirondack Clean Water Initiative, launched in 1997 and set the stage for much of AWI's current work. This pioneering program laid the foundation for our partnership with Protect the Adirondacks and formation of the Adirondack Lake Assessment Program which celebrated its 25th year in 2022. The Clean Water Initiative sought to establish a robust watershed protection strategy using long-term water quality data and a network of dedicated volunteer monitors. The effort broke new ground in the field of watershed planning and land use management in the region.

In 1999, AAI took the lead in aquatic invasive species management in the Saranac River watershed. The following year, the first-ever Watercraft Inspection Steward Program in the state was established by AAI at the Upper St. Regis boat launch. These initiatives quickly gained momentum, becoming the largest programs of their kind in the region as public awareness and concern about invasive species grew.

As we do today, AAI relied heavily on Paul Smith's College students to work as summer interns, gaining valuable work experience. During a time of no advanced GPS technology or cell phones, AAI field crews relied on old fashioned map and compass and the occasional inflatable raft. It was fun to hear Michael's stories of grand field adventures with familiar names.



Image above: Michael Martin, former Director of AAI. Michael is still studying Adirondack Lakes.

We are forever grateful for the work of AAI. Many of the partnerships formed in the early days still remain. Much of what the AAI team started 30 years ago continues to be foundational to our work today. We extend our thanks to Michael and the late Charlie Ritchie for their vision and dedication to protecting clean water.

Carrying on the Legacy



Dan Kelting, Ph.D.

Dan Kelting grew AAI into the Adirondack Watershed Institute in 2002. Under his leadership, the Adirondack Lake Assessment Program became the largest such program in the region. Dan coordinated the development of the Adirondack Park Nuisance Species Management Plan which seeded AWI's efforts to launch the regional spread prevention program. Kelting's impact has been far reaching and include his many scientific contributions to the region such as understanding the threats of road salt on Adirondack water quality. Dan moved into the role of Paul Smith's College Interim President in 2022.



Eric Holmlund, Ph.D.

Eric Holmlund pioneered AWI's regional aquatic invasive spread prevention in 2000. He brought in more than \$18 million to the program over the 20 years he served as AWI's Stewardship Program Director. This effort grew from a program with 5 stewards to the largest regional spread prevention program in New York State. Eric currently serves as the Director of Graduate Studies and Professor of Environmental Studies in the Environment and Society Department at Paul Smith's College.

Our Team



Zoë Smith
Executive Director



Bill Brosseau
Director of Stewardship
and Education



Heather Coleates
Program Analyst



Tom Collins
Education and Outreach
Program Manager



Carli Courville
Research Technician



Jennifer Denny
Stewardship Program
Manager



Hunter Favreau
Research Technician II



Michale Glennon, Ph.D
Senior Research Scientist



Joline Hall
Research Technician II



Mikala L'Hote
**Graduate Research
Assistant**



Peter Murphy
**Watercraft Decontamination
Program Manager**



Sue O'Reilly
Operations Manager



Stephanie Rock
**Watershed Science
Communications Fellow**



Lija Treibergs, M.S.
Research Associate



Connor Vara
Research Technician II



Brendan Wiltse, Ph.D.
**Senior Research Scientist
and Director of Student
Engagement**



Brett Wimsatt
**Stewardship Program
Assistant Director**



Elizabeth Yerger
Laboratory Director



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