

Our Goal

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The Alliance for Aquatic Resource Monitoring (ALLARM) is Dickinson College's community science center, located in Carlisle, Pennsylvania.

ALLARM educates communities to use science as a tool to investigate water quality health and use findings to inform stream protection and restoration efforts. ALLARM achieves its work in collaboration with diverse partners - non-profits, academia, communities, government and volunteers.

Cover: Peeking through overhanging vegetation at a stream

This page: Director Julie Vastine demonstrates how to use a turbidity tube at a training in Susquehanna County.

Dickinson

A Note from the Director

2022 was a fun year. It feels like we hit our stride balancing the hybrid world we are all becoming accustomed to. It has been wonderful seeing volunteers in person on a regular basis but we are loving the opportunities to connect volunteers from diverse geographies with each other in the space of shared learning.

2022 was a big year for data interpretation workshop and story-telling. ALLARM held its largest interpretation workshop with 62 sites and 90+ volunteers! It was also a year to dive deep into restoration science as ALLARM worked with Stroud and the Chesapeake Monitoring Cooperative on a new stream monitoring program.

We are so thankful for our volunteer scientists, community partners, collaborators, funders, and Dickinson College.

In appreciation,

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Julie Vaster

Julie Vastine, Director

Volunteer Monitoring and Technical Assistance



York: County Stream Team Volunteer, Jeff Gleim, poses with Stephanie Letourneau and members of the Chesapeake Monitoring Cooperatve at their Chesapeake Watershed Forum session, *Dollars and Sensing*.

C-SAW

ALLARM celebrated its 21-year anniversary with the Consortium for Scientific Assistance to Watersheds (C-SAW) by engaging new partners in Western Pennsylvania. ALLARM's new partnerships are with the Center for Coalfield Justice, Conewango Creek Watershed Association, Pennsylvania Lake Erie Watershed Association, and Westmoreland Master Watershed Stewards. ALLARM continues to refine and improve its technical support services to provide the best assistance to community watershed associations.

Chesapeake Monitoring Cooperative

2022 was another exciting year for the Chesapeake Monitoring Cooperative. This year, the team revised its Quality Assurance Project Plans – ALLARM helped with the non-tidal and macroinvertebrate QAPPs. It was very exciting to restructure them into a more readable format. Additionally, the team has continued to evaluate gaps in the watershed to identify additional avenues to leverage data collected by volunteer scientists in assessing progress on Bay goals.

2022 Chesapeake Watershed Forum

ALLARM enjoyed participating on the Forum Planning Committee again this year. In addition, ALLARM co-presenteed in two sessions. The first was with Interfaith Partners for the Chesapeake. The second was with members of the Chesapeake Monitoring Cooperative to showcase different kinds of monitoring equipment and techniques. This presentation not only described effective and affordable monitoring methods, but also showcased DIY equipment created by York County Stream Team volunteer, Jeff Gleim.

Stream Team Spotlight

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Both ALLARM and Stream Team volunteers were excited to dive back into macroinvertebrate trainings.

It has been quite a robust year in the Stream Team sphere!

ALLARM expanded Stream Team into three new counties in 2022- Clinton, Lycoming and Susquehanna - onboarding 24 new monitors!

To kick off the year, ALLARM facilitated its largest data interpretation experience to date! Data packets were created for 62 Stream Team sites throughout the watershed and helped guide a learning experience from discussing water quality influencers to data analysis and finally data interpretation. Volunteers had the opportunity to share their findings utilizing their local knowledge and expertise.

Additionally, after a significant pause due to COVID, ALLARM was finally able to hold macroinvertebrate identification and collection workshops. ALLARM held a workshop open to Cumberland, Dauphin, and Lebanon volunteers in September and a workshop open to Lackawanna and Luzerne volunteers in October.

Stream Team volunteers also began the process of adding two new water quality parameters to their monitoring – stage and water clarity!

"[...] I thought how nice it was to be part of [a Stream Team] event like this, where people travel from their home counties and come together in a collaborative effort to learn how to monitor their local streams and rivers." -Amaya Hamilton '24 - Macroinvertebrate Workshop

"Since I work primarily in the lab, it was wonderful to get to virtually meet some of the volunteers whose water samples I've run QC on, and to be reminded that every bottle of sample water has a person and a story behind it!" - Amelia Harper '25 - Virtual Stream Team Training

Restoration Monitoring Profocol

Members and partners of the Chesapeake Monitoring Cooperative discuss aspects of the Community-Based Restoration Monitoring Protocol in development.

We're making positive progress towards a protocol that assesses the visual, physical, biological and ecological impacts of in-stream and stream-side restoration projects.

This year, work continued on developing the Community-Based Restoration Monitoring Protocol. In January, ALLARM facilitated a studey design process with CMC, Stroud, Bay Program and NFWF staff to determine the scope, data use and methods for this new protocol. ALLARM began testing concepts and created the first draft over the semester, and with a draft in place, could begin the process of protocol refinement.

Researching methods and parameters for monitoring was an essential step of the process to determine the best practices that would allow for the successful capture of data at the diversity presented by streams throughout the watershed. As the team went out into the field, each site visited brought with it nuanced situations and challenges that helped streamline and inform the decisions and instructions within the manual.

As the Chesapeake Bay watershed nears the deadline for 2025 pollution reduction goals, more and more restoration projects are being installed. This new restoration monitoring project is being developed will hopefully help determine if these projects are having their intended impact.

"There is something incredibly rewarding about developing a protocol, and with each field test, seeing it come together more and more. You start to imagine what it will be like when complete, when volunteers can be engaged, and get very excited." - Phoebe Galione, Outreach Manager.

Watershed Coordinator Highlights

Student watershed Coordinators work on monitoring a site along the LeTort Spring Run, first washing the sampling bottle.

2022 allowed for a wide breadth of in-person and virtual events for student watershed coordinators to engage with!

"Hearing volunteers sharing their monitoring experiences, I feel that I am a part of a larger effort – an effort to break down the distinction between scientists and the public. As people build capacity to solve their challenges, it gives me hope that we are not powerless as we think, that we have the capability to make positive changes to the world." – Nhu Truong '22

"Being able to train volunteers, monitor the LeTort, test protocols, and create informational guides, among so much more, has allowed me to understand the importance of civic engagement and science communication." – Darcy Bromley '22

"The diverse range of experiences that I have been involved with at ALLARM has given me a base knowledge for future jobs in the environmental sphere, both by letting me develop communication, teamwork, and critical thinking skills, but also by allowing me space to experience new things and determine what I am interested in personally." - Cat Dickman '22

"After a year spent engaging with enthusiastic volunteer monitors and passionate ALLARMies, I understand the importance of ALLARM as an organization that can transform the lives of volunteers, aquatic species, and the health of watersheds." – Claudia Bonaccorsi '22

Justice, Equity, Diversity, Inclusion (JEDI)

Scenec view of a waterway receiving restoration work in the form of riparian buffer planting on the far bank

ALLARM is taking steps towards being a more inclusive and equitable organization.

Special Edition Newsletter

In the fall of 2022, the ALLARM team took to researching some of the challenges being reckoned with in the Chesapeake Bay Watershed and greater c-science community. From recognizing microaggressions, to creating a toolkit for bystander intervention, analyzing equitable water access to dismantling white privilege in the workplace, our student Watershed Coordinators dedicated a large portion of their fall semester digging into the work that has already been done in these areas and seeing where improvements can be made within our own workplace and the environment we create. It is our goal to finalize and release this research alongside next year's annual newsletter.

Looking To the Future

Additionally, ALLARM is assessing what we need to improve on in order to ensure that the ALLARM offices, and all off-campus outreach and experiences, are welcoming and equitable for all participants. In the upcoming years, we hope to begin some on-the-ground outreach to new communities in the northern Chesapeake Bay Region.



ALLARM Spring 2022 graduating seniors and full-time staff (Left to Right) Stephanie Letourneau, Phoebe Galione, Darcy Bromley '22, Nhu Truong '22, Claudia Bonnacorsi '22, Cat Dickman '22 and Julie Vastine

Funding Sources



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ALLARM's 2022 by the numbers

10 Community partners supported in Pennsylvania and New York
5 Community workshops
8 Virtual and in-person events
8 Conferences and national webinars
22 Stream Team virtual and in-person meetings and workshops
230 Volunteers reached
Over 130 Dickinson students reached through class collaborations
Over 700 hours of monitoring

Nitrate TNT vials lined up with their associated water sample as the test reacts.