
# Annual Report

# 2023

# Our Goal

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 numerous non-profits, agencies, and community and volunteer partners.

Cover: A rocky stream runs through a wooded area.

This page: ALLARM staff collect macroinvertebrates sampling at a local stream.

Dickinson


# A Note from the Director

2023 was an incredible year for ALLARM filled with transitions, exciting staffing developments, and renewed connection with our volunteer monitoring community. ALLARM was able to share our work at two national conferences and had the privilege of hosting the Mid-Atlantic Volunteer Monitoring Conference. The ability to share and learn from our collaborators was incredibly rewarding.

I also feel an immense amount of gratitude to the full-time and part-time staff at ALLARM. Phoebe, Stephanie, Isabel, and Lindsay stepped up to help run ALLARM without a full-time director, creating the space for me to take advantage of a rewarding opportunity to help the U.S. Environmental Protection Agency explore avenues for leveraging participatory science as a tool to improve environmental and human health. I am also appreciative to our volunteers, collaborators, and grant partners for their understanding as we navigated this unique year and for our shared work.

In appreciation,

Julie Vastine

Julie Vastine, Director

# A Year of Conferences


The ALLARM full-time staff and director, Jules Vastine, smile together at the National Monitoring Conference in Virginia.

## This year, ALLARM had the opportunity to travel across the nation to spotlight ALLARM's Data Orientation and Interpretation process.

ALLARM hosted two workshops at both the National Monitoring Conference in Virginia, and the C*Sci conference in Arizona. These extended session workshops aimed to provide a collaborative space for ALLARM and attendees to share about different approaches to data interpretation in volunteer and community-based monitoring programs. Using Stream Team as a case study, ALLARM was able to spotlight the scaffolded learning process used to facilitate data interpretation and to leverage volunteers' local knowledge. Attendees in both sessions had robust conversations, shared tips and tricks, and elevated success stories from engaging communities with data.

## In total, ALLARM attended 7 Conferences in 2023.

ALLARM presented at the National Monitoring Conference, C*Sci 2023, Mid-Atlantic Volunteer Monitoring Conference, Chesapeake Watershed Forum, Choose Clean Water Conference, NY Watershed Forum & the PA Statewide Conference. Topics addressed included data interpretation, the importance and role of community science, volunteer spotlights, water quality influencers, study design, and more!

"It was incredible to be in so many spaces where people advocated for and understood the value of community science. It's in these spaces where the best ideas and tips are shared and where new collaborations begin."
- Phoebe Galione, Outreach Manager

# The Mid-Atlantic Volunteer Monitoring Conference

*Attendees gather together during Spotlight Night, sharing program information, accomplishments, DIY equipment, and more!*

ALLARM was thrilled to host the Mid-Atlantic Volunteer Monitoring Conference (MAVMC) at Dickinson College, funded by the PA Department of Environmental Protection with 319 funds from EPA. It was the first time this conference has been held since 2015. Over the course of two days and four concurrent sessions, ALLARM hosted 100 people (more than half were volunteer scientists) to discuss a range of water quality topics, engage hands-on learning, and feature presentations by volunteer monitors, career scientists and organizations in the region.

One of ALLARM's favorite features was at the end of the first day: the Inventor's Volunteer Spotlight, a reception that featured volunteer scientists' DIY monitoring inventions and data displays. Individuals were able to showcase aspects of their programs, exciting research developments, as well as DIY equipment created to aid in the accessibility and ease of monitoring. Among those presenting where a few of ALLARM's Stream Team volunteers who walked attendees through the inventions they had created, from equipment holders and floats, to measuring equipment and upgraded sampling buckets.

**2** Plenaries
**17** Sessions
**100** Attendees

"The event was a huge success, and we are very appreciative of everyone's contributions. It was incredible to see connections and collaborations forming and strengthening while spending time together."
- Stephanie Letourneau, Community Science Manager

# Technical Assistance

*ALLARM trains Pennsylvania Lake Erie Watershed Association (PLEWA) to collect and analyze macroinvertebrates.*

## C-SAW

The Consortium for Scientific Assistance to Watersheds (CSAW) has continued to pick up steam post COVID. ALLARM is seeing an uptick in assistance requests as well as volunteers engaging in watershed activities. ALLARM's partnership with Penn State's Master Watersheds Stewards has been rewarding to help train and support an increasing body of volunteers contributing to watershed improvements across the state. This year ALLARM has continued to work with partners on data organization-interpretation-use as well supporting partners in revisiting their monitoring priorities through the study design process. Additionally, ALLARM was able to collaborate with one of the CSAW service providers, the Conemaugh Valley Conservancy, to support a community partner in south-west Pennsylvania.

## Chesapeake Monitoring Cooperative

ALLARM thoroughly enjoys collaborating with the Chesapeake Bay Program, Alliance for Chesapeake Bay, Izaak Walton League, University of Maryland, and VIMS to support communities in their data collection and sharing efforts. 2023 marked year 2 of our current 6-year grant. A key product of this year was revisiting priorities from the six Chesapeake jurisdictions and key collaborators in the watershed. ALLARM took the lead connecting with the PA and NY partners. It was an exciting year of conversation with the Upper Susquehanna Coalition to identify how data collection can support their efforts. ALLARM helped to develop a survey and present the results to Coalition members. CMC wrapped up the year with a new prioritization report detailing partners' goals and areas of focus.


*After a check-in meeting and the handing off of QC samples, ALLARM watershed coordinators and members of the Lycoming County Stream Team smile together for a photo.*

In 2023, we welcomed new volunteers from the Northern Tier of Pennsylvania who will be monitoring in Bradford County!

Knowing that the data interpretation process was around the corner for our seasoned volunteers, ALLARM reflected on the work that was done in 2021/2022 to prepare the data. Transitioning away from data management in Excel, and with the support of ALLARM Water Quality Technician, Lindsay VanFossen, student watershed coordinators Nhu Truong '22, Prerana Patil '24 and Michelle Cao '25, created an R script that will increase efficiency with the behind-the-scenes data cleaning and visualization process. This accelerated process will help accomodate the additional years of data and the additional volunteers who will be eligible for data interpretation by the time 2024 rolls around.

**113** Stream Team Volunteers
**60** Sites
**15** meetings
**8** Stream Team QC events

"This [Stream Team] meeting ultimately reminded me that my favorite part about working at ALLARM is interacting with the volunteers, getting to know their stories and understanding their connection to their site." - Michelle Hom '24 - Lycoming County Check-in Meeting

"Being able to interact with volunteers and have conversations with them [at my first workshop over the summer] was a real treat and something I look forward to doing more of in the future." Crosby Wilkin '26

# Restoration Monitoring Protocol

The Restoration Monitoring development team pose together in a stream running along the property of the Stroud Water Research Center.
Image Credit: Kristen Saacke Blunk

ALLARM continues to collaborate with the Chesapeake Monitoring Cooperative and the Stroud Water Research Center on our community-based restoration monitoring protocol, funded by the National Fish and Wildlife Foundation. 2023 highlights included additional protocol refinement as well as the development of educational resources. With the protocol finalized, the team developed a Quality Assurance Project Plan – which is exciting because of the diverse data collection approaches used in the process (photos, macroinvertebrates, physical-visual). ALLARM spear-headed the creation of training presentations, guides and informative illustrations. A favorite tool is a presentation that walks through each step of the monitoring process from equipment that will be used, to tricky scenarios seen in the field to prompt discussions during trainings.

ALLARM was able to join collaborators in the field for protocol testing as well as a retreat in October at the Stroud Water Research Center where we evaluated the cumulative progress on the project, including the development of data storage and reporting strategies. The team was able to talk through some difficult in-field situations, determine effective teaching tools, and begin the planning for volunteer engagement in the future. We also set the groundwork for successful site selection come monitoring in 2024.

Every meeting we have brings us one step closer to being able to successfully involve volunteers!

# Watershed Coordinator Reflections


Student watershed coordinators smile together after hosting a successfull Open House at the ALLARM office.

**This year was a high for both campus and community engagement.**

"Regardless of people's background and experience in science, community science provides a space to grow skills and have a hands-on chance to participate in data collection. Learning that science is for everyone also helped me to understand how it can be used for positive change and as a tool for advocacy in decision-making. Working at ALLARM has shown me the value of community work at all levels, which is something I hope to take into all of my future work."
– Grace Messimer '23

"I was encouraged to try new things [...], ranging from testing quality control samples and identifying macroinvertebrates to driving all the way to Erie, Pennsylvania with Director Julie Vastine to drop-off equipment for a new monitoring group." - Nick Bradbury '23

"Through this [campus sustainability] event, I learned the true importance of community science. Community science not only encourages communities to ask questions and be curious, but it also facilitates interactions between communities and the environments."
- Kailey Sipe '25

"Here at ALLARM, we seek to recognize and leverage the power we have. We recognize the critical work that our volunteer scientists conduct as the local experts and stewards of their waterways."
- Charlotte Kratovil-Lavelle '24

# Justice, Equity, Diversity, Inclusion (JEDI)




The ALLARM team put their hands together at the yearly ALLARM Orientation, ready for a new academic year.

ALLARM continues to explore how to make shared spaces and events more equitable and inclusive - this year involved reflection on current practices and brainstorming on what improvements to make. Topics the team explored included: how can we structure meetings to make them accessible to all volunteers, engaging both virtual and in-person opportunities? How can we reduce the barriers to monitoring so that diverse participants can engage with water quality testing?

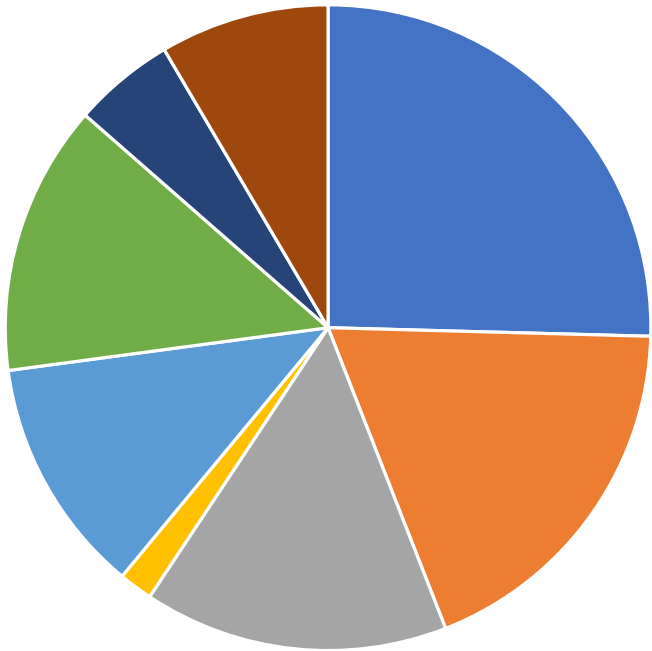
ALLARM has also begun putting in the work to create a landing page on our website where JEDI resources can be housed, including but not limited to the Special Edition Newsletter that was written in 2022 and in production towards publication. On this page ALLARM will also be spotlighting other pertinent information as well as our pledge:

The Alliance for Aquatic Resource Monitoring is committed to building a diverse, inclusive and equitable environment where all individuals, regardless of ethnicity, gender, citizenship, sexual orientation, religion, physical abilities, or other identities, receive respect. We believe that the strength of communities comes from their diversity, and strive to make science accessible to all as we collectively work towards clean waterways for current and future generations.


*ALLARM Spring 2023:*
*Top Row: Kailey Sipe '25, Dipseka Timsina '25, Amelia Harper '25, Grace Messimer '23, Lindsay VanFossen, Julie Vastine*
*Bottom Row: Prerana Patil '24, Michelle Cao '25, Stephanie Letourneau, Isabel Ruff, Nick Bradbury '23, Charlotte Kratovil-Lavelle '24, Phoebe Galione*

# Funding Sources

- $75K Dickinson College
- $55K Chesapeake Monitoring Cooperative
- $45K National Fish and Wildlife Foundation (Restoration)
- $5K National Fish and Wildlife Foundation (Cumberland)
- $35K Campbell Foundation
- $40K Consortium for Scientific Assistance to Watersheds/PA Department of Environmental Protection
- $15K Lower Susquehanna Riverkeeper Association
- $25K Gifts & Contracts



ALLARM gratefully acknowledges support from Dickinson College alumni, family, and friends, including Bruce and Jennifer Thomson P'09.

# ALLARM's 2023 by the numbers

4 National webinars/events

7 Conferences

12 Community partners supported in Pennsylvania and New York

12 Workshops

35 Community meetings

194 Volunteers reached

176 Water samples tested

Over 100 Dickinson students reached through class collaborations

Over 4000 hours of monitoring

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