



Annual Report

2021

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, community, and volunteer partners.

Cover: The Susquehanna River flows under a near-cloudless sky.

This page: ALLARM student Watershed Coordinators conduct a visual assesment of a site along the LeTort Spring Run.

Dickinson



A person wearing a blue long-sleeved shirt and a black wristwatch is pointing their right index finger towards a blue folder held in their left hand. They are standing in a grassy area with trees in the background.

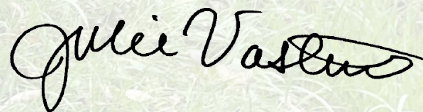
A Note from the Director

Wow! ALLARM is 35 years old! What a milestone as an organization to be able to reflect back on 3.5 decades. One could classify our history by water quality challenges and the monitoring programs developed to address those issues (acid rain, non-point source pollution, development, shale gas, Chesapeake Bay clean-up efforts). You could also frame our narrative based on the models for volunteer engagement. Finally, you could reflect on the hundreds of Dickinson College students who received professional skill building and leveraged classroom learned tools for PA and NY communities.

A constant that has remained true throughout the years is we have the best job – we have the privilege of working with volunteer scientists who are collecting water quality data and using those data for local change.

Thank you to our volunteers, community partners, and collaborators for our shared work. We look forward to seeing what the next decade holds.

In appreciation,

A handwritten signature in black ink that reads "Julie Vastine". The signature is fluid and cursive, with the first name "Julie" being more prominent than the last name "Vastine".

Julie Vastine

Julie Vastine, Director

Technical Assistance



Student Watershed Coordinator Nick Bradbury '23 walks through equipment troubleshooting tips and tricks for members of the Pennsylvania Lake Erie Watershed Association.

In 2021, ALLARM continued virtual community engagement but was also able to conduct a few meetings and opportunities in person.

New Community Partners!

In 2020 ALLARM closed its shale gas program, but 2021 has allowed for new partnerships in western Pennsylvania! ALLARM facilitated study designs for the Center for Coalfield Justice in Greene County, Pennsylvania Lake Erie Watershed Association in Erie County, and the Westmoreland-Indiana-Armstrong Master Watershed Stewards.

Chesapeake Monitoring Cooperative

2021 marked the end of the CMC's first six-year grant and the start of a second six-year partnership! We reflected on the first grant in an "Achievement Report" to capture the growth of the program over the years. We were also thrilled to be able to support the NY Water Sentinels as they developed a new monitoring program, marking a shift from shale gas data collection to non-point source pollution runoff assessment.

"Hearing this [study design] discussion was interesting to me, as I was able to peek behind the scenes and see how some stream monitoring decisions are made!" - Nick Bradbury '23

In 2021, we bid farewell to Hayat Rasul and welcomed Phoebe Galione to ALLARM as our new Outreach Manager!

Stream Team Spotlight



ALLARM met with York County Stream Team in person thanks to an outdoor meeting space!

We are thrilled with the expansion of Stream Team to 7 counties, 116 volunteers, and 68 monitoring stations throughout Susquehanna River tributaries!

Data Interpretation

ALLARM has continued to adjust and refine its data interpretation approach. In spring 2021, we developed data packets for the 20 Stream Team sites in Cumberland County on three Susquehanna tributaries. We then conducted two virtual interpretation workshops for volunteers. In the fall, we started tackling the largest data organization process to date – preparing data packets for Stream Teams with a minimum of one year of data!

The return of in-person meetings!

We were thankful that COVID vaccination rollouts allowed us to start visiting with Stream Team volunteer scientists. We enjoyed catching up, answering questions, and refreshing monitoring supplies!

“This [Data Interpretation] workshop helped affirm why I am passionate about citizen science. I love seeing individuals build scientific knowledge and understanding in addition to embracing the agency we all have, to find stories in data.” - Olivia Spildooren ‘21

“Being able to listen to the volunteers give the location-based context that the maps and graphs were unable to show on their own was definitely a highlight of the workshop.” - Isabel Ruff ‘21

Restoration Monitoring Project



Tree tubes are planted alongside a waterway in hopes of a strong, future riparian buffer.

ALLARM, along with other Chesapeake Monitoring Cooperative organizations, launched a new partnership with the National Fish and Wildlife Foundation (NFWF) to explore the role of volunteer scientists in assessing restoration best management practices.

Research:

Restoration assessment is a new and exciting area of research for ALLARM. In the spring, ALLARM seniors led their own research on restoration approaches. The research culminated in a symposium where each senior presented on their topic for 10-15 minutes and answered questions.

Setting up the Restoration Study Design:

In working with NFWF, the focus of the monitoring protocol was narrowed down to three practices – dirt and gravel roads; riparian plantings; and stream restoration. CMC developed a survey to determine what stream assessments currently take place at restoration sites and then hosted a “Knowledge Exchange Forum” with experts on restoration and restoration science.

“We are looking forward to learning different methods in assessing stream restoration, how to interpret data from these methods, and creating a connection between the impact of stream restoration projects to local watersheds and the Chesapeake Bay watershed.” - Angelo Tarzona ‘21

Watershed Coordinator Highlights



Watershed Coordinators walk down a streamside trail, ready to perform a visual assessment and collect water samples for later lab analysis.

It was wonderful having the team back on campus in person fall of 2021!

“[...] I got to pivot to virtual community science alongside ALLARM and it taught me invaluable lessons in flexibility, patience, and community building even when a community could not meet in-person.” - Olivia Spildooren ‘21

“Being a watershed coordinator at ALLARM has allowed my confidence to grow in the lab and in engaging with community members and volunteers.” Hiba Aoid ‘21

“ALLARM exposed me to the behind-the scenes for establishing connections with volunteers and Stream Team study-design. These exposures led me to work on research projects through my Earth Sciences major that has an impact to a community in Central Pennsylvania.” - Angelo Tarzona ‘21

“ALLARM has taught me the importance of taking science from the elite pedestal it is often stuck on and making it accessible to the general public because curiosity is not limited to those with a degree and publications under their belts.” - Phoebe Galione ‘21

Justice, Equity, Diversity, Inclusion (JEDI)



The sun peaks through the canopy onto a stream being visited for biological sampling.

ALLARM is dedicated to practicing and continuing conversations about diversity, equity, justice and inclusion in and outside of the workplace.

Knowledge sharing is an exceptional tool for fighting implicit bias, raising awareness, and spurring action towards newly recognized areas of improvement. ALLARM has been engaging with various DEIJ working groups where information can be effectively shared between attendees and applied to their respective organizations.

Diverse Student Voices

Our Watershed Coordinators represent unique lived experiences, perspectives, and identities. We work to create a space where all forms of diversity can be comfortably represented to their fullest extent. We encourage the ongoing discussion of DEIJ related topics throughout the academic year, holding safe space for concerns, critiques and questions which may spur on further student research towards greater enlightenment. One such topic involves the highlighting of land acknowledgements and the indigenous history of the Susquehanna River region; the ALLARM office resides on the unceded land of the Susquehannock people.

Area for Work

We could not do the work that we do without the engagement of volunteers. Volunteering, however is inherently a privilege. Thus, we are currently looking into ways to support those in underinvested communities who are interested in engaging with their local waterways.

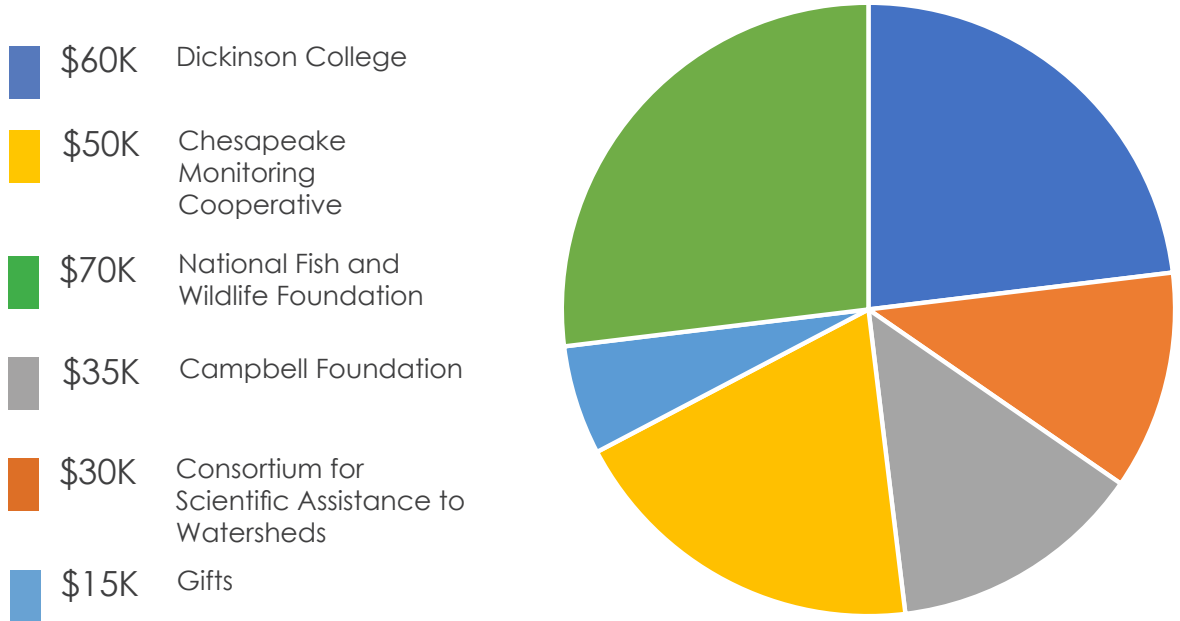


ALLARM Spring 2021 Staff (Left to Right)

Julie Vastine, Olivia Spildooren, Angelo Tarzona, Isabel Ruff, Shante Toledo, Hiba Aoid, Phoebe Galione, Stephanie Letourneau

Not pictured: Nhu Truong, Grace Messimer, Kyra Lerner

Funding Sources



ALLARM gratefully acknowledges support from Dickinson College alumni, family, and friends, including John '60 and Ann '63 Curley, and Julie Walters.

ALLARM also appreciates support from the Charles Merrill Kurtz Fund, established in memory of Charles M. Kurtz, class of 1907.

ALLARM's 2021 by the numbers

- 9 Community partners supported in Pennsylvania and New York
- 6 Community workshops
- 9 Virtual and in-person events
- 20 Stream Team virtual and in-person meetings and workshops
- 103 Dickinson students reached through class collaborations
- 183 Volunteers engaged
- 125 Water samples analyzed
- 1,325 Total water sample tests
- 4 Instructional videos created for volunteer monitors

Bottles of Wide Range Indicator used for pH testing.