A Typical Week at ALLARM

by: Adrienne Brown

Tucked into the back of Kaufman Hall on Dickinson College’s campus is the ALLARM office, where a select group of dedicated students come to make a difference in the world of streams and community-based science. Working at ALLARM is a rewarding experience and it differs greatly from the other work opportunities on campus. My friends often ask me what a typical week at ALLARM is like but the truth is, that is a difficult question to answer.

A typical workweek at ALLARM is far from monotonous. The student staff and directors are constantly starting and finishing projects, which adds a healthy amount of variety to our daily activities. Part of the beauty of working for this organization is the opportunity to experience multiple different aspects of nonprofit life. Most students work in a few of different project areas at once and often have to switch gears from one week to the next. Since there is a wide array of projects taking place throughout the semester and year, it is hard to capture a typical week in the office.

If there were a routine to be found in our office it would come in the form of staff interactions. Students who collaborate on a weekly basis get into the habit of talking with one another about the projects they are working on and come to rely on the time they have together. In that way the ALLARM staff becomes like a family, supporting each other not only on work-related challenges, but also in everyday life. Since our activities are so varied, not all of us come into the office and sit down at a computer everyday, so we count on coming into the office to see one another instead.

Every week at ALLARM features the weekly staff meeting, which this year, takes place in a seminar room in Kaufman Hall. The staff meeting might be the only constant aspect of the ALLARM experience. The purpose of our staff meeting is to ensure that all members of the ALLARM staff are aware of what is happening in each project area. Every student at ALLARM is working on an important, valuable project; one of our staff meeting’s rules is you are not allowed to use the word “just” when describing your work.

It is important for all members of the staff to have current information about what is going on inside and outside of their respective program areas. Our meetings are planned and orchestrated
ALLARM, founded in 1986, is a project of the Dickinson College Environmental Studies Department. Our team of students, professional staff, and faculty provides community groups with comprehensive technical support for locally-driven watershed assessments, protection, and restoration. For more information visit our website: www.dickinson.edu/allarm. Stream of Consciousness is published thanks to the generous support of the Charles Merrill Kurtz Fund, established by Betty Puzak in memory of her father, Charles M. Kurtz, Dickinson Class of 1907.

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ALLARM Special Edition Newsletter

ALLARM Insider

Featuring articles about ALLARM's project areas

2 Stream of Consciousness
by veteran staff members. For
spring 2014, meetings were led by
Maame Akua Marfo and Shanice
Grant. Each week the meeting
features a “Fun Question” that is
designed to foster staff relation-
ships. The Fun Questions are light-
hearted questions that prompt
us to share things that would not
necessarily be brought up in the
office. Past question topics have
included Halloween, pre-exam
eating habits, and childhood
fantasies. Some of the responses
to these questions have risen to
legendary status. Regardless of
the questions topic, Max Egener
manages to always bring up his
alligator costume and our found-
er and science advisor Candie
Wilderman always has the most
entertaining responses.

Part of what makes working
at ALLARM so rewarding is the
interactions between coworkers.
There are two staff members who
can be counted on to keep it
interesting in the ALLARM office:
Andrew McGowan and Maame.
Maame, who has always aspired
to be the next Beyonce (as we
learned in response to a Fun
Question one day), enjoys singing
in the office. This semester her set
list has included music from Neon
Jungle, Demi Levato, Bastille, and
Artic Monkeys with a highlight on
Delta Rae’s “Bottom of the River.”
It is not unusual to come into the
office and hear her singing from
her place at a computer. Sing-
alongs are highly encouraged at
ALLARM, especially on workshop
road trips. Good humor is another
highly encouraged aspect of AL-
LARM’s atmosphere, and Andrew
quickly earned his reputation as
the office’s master of wit. During
staff meetings and office inter-
actions he is quick to liven up
the conversation with a hilarious
one-liner.

Though our projects are
constantly changing there is a
relatively typical pattern for the
members of the ALLARM staff. I,
for one, am always parked be-
hind my “favorite computer” in
the 119 “cozy office” working
on ALLARM’s publications. Elise
Minichiello is not really in the of-
office much because she is usually
out at the riparian buffer planting
or maintaining trees. Andrew,
Katie Mattern, and Kelly McIn-
tyre do dishes in the lab regularly
and monitor the LeTort Spring Run
every other month. Shanice and
Maame have to plan the staff
meeting each week and Caroline
Kanaskie does a lot of reading for
her portion of the ALLARM history
project. Emily Kaplita’s routine
is to drink tea and deal with the
fast-paced Environmental Edu-
cation program. Max and Isabel
Harrison are also part of the En-
vironmental Education program
and are often out on adventures.
Carmen Mann spends her time
working on stormwater initiatives
with Maame, which sometimes
involves crawling into repurposed
pickle barrels.

It is the fluid nature of work
here at ALLARM (pun intended),
which keeps things interesting and
prevents us from having a typical
week in terms of projects and du-
ties. In the event of an upcoming
workshop, the students who will
be participating drop their current
projects and begin to practice
presentations, learn information
relevant to the audience, and
make arrangements for travel
accommodations.

A typical workshop trip results
in cherished memories among the
staff. These memories include, but
are not limited to, haunted hotels,
shady restaurants, acclaimed
playlists, broken meters, and in-
teresting personalities. No matter
how interesting a workshop trip
becomes, there is always some-
thing to learn about professional-
ism and citizen science.

All in all, a typical week is a
strange idea for those of us who
work at ALLARM. Our director,
Julie Vastine, sums it up perfectly
by describing the ALLARM experi-
ence as something that is, “never
boring, always diverse, and never
the same thing.” Together as an
ALLARM family we move through-
out our semester addressing
challenges as they come to us,
and always changing to meet the
needs of our campus and com-
munity. We are a dynamic group
of students, which makes the
atmosphere at ALLARM light but
professional. If you are ever visit-
ing Dickinson College, make the
trip to Kaufman Hall and come
visit us in office 124!
Looking back at the past newsletters brought me directly to the heart of ALLARM. ALLARM’s initial goal as the Alliance for Acid Rain Monitoring was to work with volunteers across the state to monitor the effects of acid rain on Pennsylvania’s waterways. This project was carried out with the help of volunteer monitors and produced the largest collection of pH and alkalinity data for streams in the state. Until 1993, a quote from Margaret Mead appeared on the cover of Stream of Consciousness: “Never doubt that a group of thoughtful, committed citizens can change the world. Indeed, it’s the only thing that ever has.” ALLARM illustrated the truth of these words and published data produced by the dedication of volunteers in an organized way in Stream of Consciousness. This publication unified volunteers and groups statewide, allowing them to be a part of something bigger than themselves.

The evolution of Stream of Consciousness has been a long journey. While the layout and design certainly have changed, the content of this publication has also been altered over time. The newsletter, called the ALLARM Bulletin until 1988, was used as a resource for volunteer monitors in the absence of email in the early 90s, uniting them with other monitors and updating them on important issues. ALLARM founder Candie Wilderman refers to the newsletter as “the glue that held us together.” Over the years, Stream of Consciousness has been a means of communicating test kit improvements, important experiences of student watershed coordinators, growth in our programs, and changes in government regulations concerning the environment. Some of the oldest editions include forms to order ALLARM T-shirts, baseball caps, and umbrellas by mail.

When ALLARM changed its name from the Alliance for Acid Rain Monitoring to the Alliance for Aquatic Resource Monitoring in 1996, the content of the newsletter changed as well. Previously, all volunteers monitored the effects of acid rain. After 1996, ALLARM worked with communities to help them design and implement water quality assessments to answer self-developed questions about their streams. The spectrum of topics was balanced into the early 2000s, but Stream of Consciousness started to include a mix of articles on many environmental issues, sustainability at Dickinson, and student experiences abroad. While these articles were well written, showed the diversity of ALLARM’s student staff, and interested many volunteers, they drifted away from ALLARM’s focus on water quality issues. Stream of Consciousness drew monitors together again when shale gas drilling (also called fracking) started to become a news item in Pennsylvania. When ALLARM developed a shale gas monitoring protocol in 2010, the following newsletters were packed with articles on shale gas. This topic interested or effect-ed most readers, and Stream of Consciousness united most of its monitors again with updates on fracking.

In this 2014 newsletter, we are getting back to the basics and updating readers about the programs here at ALLARM while still providing articles on a variety of environmental topics. We hope to unite our volunteer monitors, “a group of thoughtful, committed citizens,” closer together with this well-rounded issue.

PS: If any of our monitors have copies of Stream of Consciousness published prior to 1991, please contact us! Our archive is missing these preliminary issues.
A Time for Reflection: Candie Wilderman Retires from the Environmental Studies Department

This coming spring, Candie Wilderman, founder of the Environmental Science Department and the Alliance for Aquatic Resource Monitoring at Dickinson College, will teach her last class and become a Professor Emerita. We couldn’t let Candie retire without discussing her career and life beyond retirement, including her future at ALLARM.

On Wednesday, October 8, 2014, I had the opportunity to sit down with Candie and discuss her passions for learning, teaching, and collaborating. Born in Philadelphia, Pennsylvania and growing up in Maryland, Candie’s interest in nature began as a young child, heavily influenced by her parents and their love for the outdoors, along with an early connection to the Chesapeake Bay. It was not until Candie’s sophomore year in college that she began to lay the groundwork for a successful career in the environmental field.

One thing that struck me during our conversation is that Candie has always been a trailblazer, from her decision to major in Geology at Tufts University to her work developing the environmental studies/science curriculum at Dickinson College. At Tufts, many told her that geology was for men and that she has little possibility of a future in the field. However, she persevered and graduated with a bachelor’s degree in Geology. Since it was a time when affirmative action was beginning to give women more preference in the workplace, to everyone’s surprise, Candie found that she could have been employed at multiple large oil companies—but she always knew that she wanted to use her education to make a different kind of impact on the world.

During the summer after her sophomore year in 1966, Candie worked in Appalachia with communities to provide community assistance, funded by the War on Poverty program during President Johnson’s administration. This experience was life-changing for her because she learned the important concept of community ownership. This philosophy of community support allows the community to fully analyze the issues at hand and proceed to a solution for themselves, instead of relying on an outside source to simply resolve the problem for them.

After receiving her bachelor’s degree in Geology, Candie received her master’s degree at Harvard University. At Harvard, she pursued paleontology, the study of the ancient history of life. Although she loved the subject matter, Candie couldn’t find the relevance of the field to real-world human problems, so she returned to Appalachia for five years to work, where she taught in a small college and worked with coal miners and community members on issues of social justice in collaboration with her husband and a group of colleagues.

Candie came to Dickinson in 1974 as an instructor in the Geology Department. In 1975 she was asked to teach an environmental science course that was currently being team-taught at the college by four professors, one from each of the science departments. Initially, faculty thought that environmental studies was simply a fad, but through student persistence and help from a small group of engaged faculty, the program expanded and the Environmental Studies certificate was established in 1981. This certificate had an interdisciplinary core curriculum, theme, and senior seminar. As the program picked up popularity among both students and faculty, professors began to share their interests in teaching subjects relating to environmental studies. The growth of environmental studies as an academic field.

Candie makes friends with a koala on a trip to Australia.
nationally, along with the increasing interest in the students and faculty, dispelled the concern that environmental studies was a passing fad. Finally, with the help of other faculty members and the persistence of the student body, the Environmental Studies major was passed in 1994.

Finding her passion in environmental science, Candie returned to school in 1980 to obtain her PhD from Johns Hopkins in Geography and Environmental Engineering. Dickinson College granted Candie a four-year leave of absence, enabling her to work part-time while finishing her studies. Fully immersing in environmental science allowed what Candie calls her “interest in science and its application to human problems” to become a deep-rooted passion that she was then able to bring to the founding of ALLARM.

ALLARM was initially named the Alliance for Acid Rain Monitoring at its founding in 1986 with the sole purpose of studying the effect of acid rain deposition in the waterways of Pennsylvania. Much like its current and vital engagement of volunteer monitors, different community members would collect weekly data on alkalinity concentrations and pH from numerous sites on Pennsylvania’s streams. Volunteers would send their results to ALLARM, and the ALLARM team would analyze the findings and develop reports. With data from over 700 sites across the commonwealth, ALLARM was able to demonstrate that the impact of acidic deposition on our streams had been underestimated, and used the data to contribute to works towards federal legislation to control the precursors of acid rain.

As public concerns grew to aquatic watershed health, Candie knew that ALLARM’s mission needed to grow as well, finally renaming the non-profit to the Alliance for Aquatic Resource Monitoring in 1996. Thanks to a $100,000 grant given directly to ALLARM as the result of a clean water litigation case, Candie was able to hire Lauren Imgrund, the first director of ALLARM, and to move into a model of close mentorship of watershed groups to train them to use scientific data to address multiple issues of concern. ALLARM has further grown to include three professional staff and to develop a broad program for monitoring the impacts of shale gas extraction activities on small streams in Pennsylvania and such as riparian buffer restoration and stormwater mitigation activities. Candie still remains a vital contributor to the organization as Science Advisor. After her retirement from teaching, Candie will continue to work with ALLARM on specific projects, including the creation of new data interpretation workshops for our shale gas volunteers.

Through all of Candie’s hard work and contributions, everybody that has had the privilege of knowing or working with Candie will be sad to see her leave. Even though Candie will miss teaching, she is looking forward to seeing the Environmental Studies Department and ALLARM expand in new directions under new leadership. Candie is also looking forward to more family time and reading her favorite book, Knuffle Bunny, to her grandchildren, even if it will be her hundredth time.

Thank you, Candie, for all the contributions you have made and for establishing our home, ALLARM!

The Environmental Studies Department will be holding a retirement party for Candie on April 17th. Keep an eye out for an invitation.
The Ridge and Valley Streamkeepers (RVS) was founded in 1999, and since then the group has been dedicated to maintaining and restoring the health of the Town Creek, Sideling Hill Creek, and Fifteen Mile Creek watersheds. RVS is a non-profit organization that has fifteen volunteer monitors working to assess these three stream systems. They have published critical data on the quality of these watersheds and helped to identify what factors influence water quality most in this area. RVS monitors have all undergone training in the chemical, biological, and physical testing of streams to ensure that the data they collect are accurate and credible.

Seasonal variability has been an influencing factor of particular attention for RVS because the landscape of these watersheds consists of high ridges and low valleys, hence the name of the organization. These ridges and valleys create great variations in stream flow based on the season’s level of precipitation. The RVS monitors measure turbidity, temperature, nitrogen, pH, dissolved oxygen, and alkalinity throughout all three watersheds. Turbidity is a measure of water clarity and how far light can penetrate the water column. Measuring the concentration of nitrate-nitrogen is important because even though it is a key nutrient for organisms, too much can cause damaging eruptions of algae, called algal blooms. Knowing how much dissolved oxygen there is in a stream can tell a monitor how well that stream sustains fish populations.

In order to determine the acidity of a stream, monitors measure pH, and in order to determine how well that stream can neutralize/buffer acidic inputs, monitors measure alkalinity.

The three creeks that RVS monitors are located in south-central Pennsylvania and western Maryland. They flow south until they reach the Potomac River, which ultimately empties into the Chesapeake Bay. This area contains many rare plant communities and some endangered species, and more than 75% of the land within these watersheds is forested. This makes for uniquely pristine natural environments that must be monitored and protected to maintain their exceptional beauty. The RVS mission is: “to bring together citizens passionate about protecting the health and beauty of Town Creek, Sideling Hill Creek, and Fifteen Mile Creek. Through science and education we work together to study the streams and involve the entire community in conservation of these resources for present and future generations.” The RVS monitors believe that the watersheds they monitor are vibrant and diverse recreational places that should be enjoyed by everyone. It is for this reason that they seek to engage their community in ensuring the health of these important watersheds.

Since 2000, RVS
A baby salamander found by a RVS monitor. Photo credit: Jason Cessna

and ALLARM have fostered a partnership to design and implement a monitoring protocol using strategic planning. ALLARM has helped RVS members become skillful stream monitors with workshops focusing on chemical and physical parameters, macroinvertebrates, and shale gas. ALLARM has also worked with RVS to compile, organize, and analyze stream data while conducting quality assurance and quality control of their water samples. RVS also works alongside the Western Pennsylvania Conservancy, Maryland Department of Natural Resources, the Pennsylvania Fish and Boat Commission, Pennsylvania Department of Environmental Protection, and the Canaan Valley Institute. In addition to their stream monitoring, RVS has worked with other community groups on various projects such as tree plantings and stream cleanups.

Diane Yearsley, RVS’s monitoring coordinator who has been with the group since the beginning, says that the thing she loves most about being an RVS monitor is “working with the people and being in the outdoors. I have always found this to be a special place. I was lucky enough to canoe it many years ago and knew it needed protection.” “I was able to connect with the RVS folks and, as they say, the rest is history,” continues Yearsley. Jason Cessna, RVS’s current president, says that his favorite part of the job is “the close interaction with the local people.” Commenting on the RVS monitors’ working dynamics Cessna states: “We’re a congenial group with similar cares and this contributes to everyone’s enthusiasm and productiveness.” Both Yearsley and Cessna have said that although the group continues to produce meaningful, extensive data on their watersheds, the most difficult obstacle to overcome is getting a high amount of sustained, widespread community involvement. Nonetheless, “The future looks bright and environmental awareness is certainly growing,” says Cessna.

The Ridge and Valley Streamkeepers will likely continue to play a pivotal role in the world of Pennsylvania and Maryland volunteer stream monitoring for many years to come. The organization is the best example of the hard-working, passionate group of people that is needed to produce quality watershed data and analysis. With RVS monitoring Town Creek, Sideling Hill Creek, and Fifteen Mile Creek, we can expect these watersheds to maintain their health and beauty.
The Environmental Education program was created in 1993 by Dickinson College and ALLARM alumnus Matthew Kloiber, as Students Monitoring Acid Rain Together (SMART). SMART’s main goal was to involve students in the weekly monitoring of Pennsylvania’s streams, lakes, and rivers.

SMART’s goals were to educate kindergarten through 12th grade students about acid rain and the environment, help to foster children’s interest in science and the environment, show students that they can do something to solve an environmental problem, and build a sense of environmental stewardship with the students. SMART held workshops, gave presentations, and created displays for interested school groups.

As the ALLARM organization began to undergo a few changes (including a name change) so did SMART. The program expanded beyond acid rain monitoring to explore diverse water quality lessons. For example, the SMART program started a partnership with Ron Yerger’s advance placement environmental science class at Lower Dauphin High School, which to this day is still going strong.

In 2007, ALLARM changed the name of the SMART program to Environmental Education (EE), which still has the same goals: to partner with local K-12 teachers and youth-based organizations in order to teach students about aquatic ecosystems and connect them to their local environment. ALLARM’s EE program is more broad than monitoring and now creates aquatic and environmental education programs to meet the specific needs of teachers and partnering organizations. It also provides K-12 youth with hands-on experiences in understanding aquatic ecosystems, scientific research and data interpretation.
ALLARM has formed many long-term partnerships over the years with local schools and organizations. In order to continue providing education presentations for the local community, we encourage teachers and community organizations to reach out to us if they are interested in forming a relationship with ALLARM. We enjoy helping students to interactively learn science and gain appreciation for the environment. A couple of groups and schools ALLARM’s EE programs have worked and still are working with are Crestview Elementary, North Dickinson Elementary, Lower Dauphin High School, Carlisle Parks and Recreation, Girl Scouts, and Diakon Wilderness Center.

The program also offers a wide range of activities and workshops that comply with Pennsylvania’s environmental education standards. Each level has a different program that is tailored to meet the goals of the organization.

On February 11, 2014, Emily Kaplita and I taught a first grade class at North Dickinson Elementary School about living and non-living things (quick nod to Matt Freedman ’08 we still use his laminated illustrations in the interactive activity). Leading up to the event, I was able to experience the process one must take when creating a lesson plan, which was very rewarding.

On the day of our event, we decided to engage the students with both a PowerPoint presentation and a hands-on activity for added visualization. The young students were incredibly bright and engaging with no shortage of things to say. They had a surprisingly complex understanding of certain environmental processes. For example, when discussing how plants “eat,” one child remarked on the cyclical nature of cellular respiration between plants and animals. He called humans’ relationship with plants amazing, almost like recycling.

The young students were incredibly bright and engaging with no shortage of things to say. As with all engagements involving young students, there were many humorous moments as well. For example, one young girl adamantly insisted that a balloon was a living thing. At the end of our presentation one child even asked us if we had a website where he could learn more at home! Needless to say, the experience was incredibly enjoyable from start to finish. I appreciated the opportunity to interact with the local community, promote environmental awareness, and help educate the next generation.

In April, Emily and I got the chance to return to the same class to teach the students about wetlands!
Imagine yourself as a wrapper that someone dropped on the side of the street. You continue to be ignored by passersby. A few days pass when a strong wind blows you into the street. Another week goes by and the rain you have so dreaded finally starts. As it strengthens in velocity it begins to lift you off the asphalt and you are quickly swept along Cherry Street in Carlisle. At first you think that you are up for a fun ride, viewing Carlisle from a new vantage point, until WHAM, you bump into a storm drain. More rain water flows behind you and washes you down into the bottomless abyss of the storm drain, leaving you alone and afraid.

A few days pass and you finally begin to see the light at the end of the tunnel and you enter the LeTort Spring Run. Slowly, day by day, week by week, you continue to be carried downstream to the Conodoguinet Creek, the Susquehanna River, the Chesapeake Bay, and finally into the Atlantic Ocean. On this journey you have interrupted ecosystems and polluted the water.

Stormwater is a complex conduit for pollution and there are a number of roles that home- and business owners can play to reduce their contributions to runoff. With this in mind ALLARM collaborated with the Borough of Carlisle and local environmental organizations to launch the LeTort Stormwater Education Campaign in 2007.

Stormwater is created from rain, melted snow, hail and/or sleet that flow over our land and rooftops picking up various pollutants including, but not limited to, sediments, pesticides, bacteria, heavy metals, and trash which flow into storm drains and are carried off to our nearest stream, lake, and eventually the ocean. ALLARM’s local stream, the LeTort Spring Run, is no exception.

The LeTort, nicknamed “Shrine of American Fly-Fishing” is a very important historical part of the Carlisle community. Since 1973, groups have formed with the sole purpose of protecting the LeTort, including the LeTort Regional Authority and the Cumberland Valley Trout Unlimited. The LeTort flows for nine miles and is fed from by groundwater aquifers as it makes its way to the Conodoguinet
Settled about twenty miles east of Pittsburgh, Murrysville, Pennsylvania is located in Westmoreland County, an area rich in natural beauty as well as natural resources. This area has a long history of natural resource extraction in coal and natural gas dating back to the 1800s. One of the nation’s first and most productive commercial natural gas wells, the Haymaker Gas Well, was drilled in 1878 after initially being used by a local resident to boil down maple sugar sap. This seemingly “sweet” discovery eventually led to the development of the Penn Fuel Company in the area (ExplorePA-History, 2011).

Although natural resource extraction was nothing new to the area, developments in high volume hydraulic fracturing technology (hydrofracking) began to raise questions about the impacts that this new method of extraction could have on the area. About six years after the first drilling permits were issued, hydrofracking came to the forefront in Murrysville.

At this time an ordinance came to the municipal table allowing fracking to move into the area. This prompted Murrysville Stream Monitors founder, Joe Guthrie to do something. Joe first began to initiate change by running for township council. When it was evident that a ban on fracking was not going to pass, he and his wife and fellow stream monitor, Wanda, decided to take a different course of action. In May 2012, Joe and Wanda attended...
their first shale gas training workshop run by ALLARM and Mountain Watershed Association. From there, the rest is history.

After the workshop, Joe and Wanda worked quickly to organize a group and called their first meeting as the Murrysville Stream Monitors in August 2012. People with all different interests and motivations came from a variety of places from Citizens for the Preservation of Murrysville, churches, local schools, and beyond to unite over the common goal of “safeguarding the water around Murrysville from the effects of hydrofracking.” This meeting started the group off strong as they immediately got to work dividing up their watershed into monitoring locations.

Since then the group has maintained about 7-8 full time monitors. These eight regularly monitor ten locations for conductivity, total dissolved solids, stream stage, barium, strontium, and visual observations related to gas extraction activities to have solid foundation of baseline data for their local waterways. Significant deviations from this baseline data could help to indicate if hydrofracking is having an impact on their local waterways. In addition to these eight full time monitors, the group generally has about 7-13 other attendees at each of their quarterly meetings who are interested in learning about the issue. One group of individuals in attendance is the Westmoreland County Marcellus Group, another local organization interested in the impacts of hydrofracking. Both the Murrysville Stream Monitors and Westmoreland County Marcellus Group have been attending one another’s meetings over the past few years to exchange information and experiences that have had surrounding the issue of hydrofracking.

As the Murrysville Stream Monitors were developing into one of ALLARM’s most organized and consistently monitoring groups, volunteer Lori McShea was behind the scenes tackling the essential task of data management. Lori, who was a former co-worker of Joe Gutherie, has been monitoring since the early days of the group. Lori’s motivation to monitor stems from concern over the potential health impacts that hydrofracking could have on her family, for whom local waterways are an essential part of daily life.

It isn’t uncommon to find any of her three young boys exploring and playing in one of Murrysville’s local streams or to find her family splashing around in a stream to cool off on one of their family bike rides. Since her beginning managing the group’s data, Lori has recently taken the initiative to take over as a leader of the group, carrying on the work that Joe and Wanda started before they moved. She says that being part of the group has introduced her to many new people in her community, providing her with new friendships, connections, and community-wide impacts.

In light of this new leadership, the group shows no signs of slowing down as they carry on the work that Joe and Wanda started to continue to build the group and spread the impacts of their monitoring into the greater community. The group has done tremendous work to collect baseline data before fracking began, and will continue to be integral in understanding the impacts of hydrofracking on watersheds as development continues.

References:
Starting in 2012, ALLARM Stream Restoration Coor-
dinators, in collaboration with a grant from the Dick-
inson College Farm, have been researching and
developing manuals and protocols for a new ripar-
ian buffer site on the local Yellow Breeches Creek. A riparian buffer is an area of vegetation next to a
body of water ideally made up of local trees and
shrubs. Riparian buffers are valuable tools for ensur-
ing good stream quality because they have many
functions: stabilize stream banks, provide shade, and mitigate the negative effects of nutrient and pollutant stormwater runoff. After invasive species
maintenance, organization of countless volunteers,
and planting of 125 trees in fall 2013, ALLARM suc-
cessfully saw Phase I to completion!

Major physical changes to the buffer
started in 2013 as the site was pre-
pared through the pulling of inva-
sive species led by summer Stream
restoration Coordinator Tabea Zim-
mernann ('15) pictured here in front
of the lower pasture where 125 trees
were to be planted.

The site was slowly
cleared throughout
the summer of 2013.

While the pasture was able to
be mowed, the lower buffer was
overrun with everyone’s favorite
invasive plants mile-a-minute,
stiltgrass, and multiflora rose.

Maintenance
continued into the
new academic
year with the help
of excellent vol-
unteers including
ALLARMies Katie
Mattern ('16) and
Andrew McGowan
('16).

The site wouldn’t have gotten
cleared without countless volunteers
including the goofy summer mainte-
nance crew Elise Minichiello ('14), Kelly
McIntyre ('14), and Anna McGinn ('14).

In fall of 2013, Stream Restoration Coordinators
Samantha Lodge ('15) and Elise Minichiello
began planning Phase I which entailed plant-
ing 125 native trees in the lower pasture of the
site. They spent the better part of the semester
organizing a planting crew of 40 volunteers and
developing ALLARM’s first official tree planting
day, “Save a Stream, Plant a Tree!”
Unfortunately, a day before the tree planting event Carlisle weather struck hard with a storm completely flooding the lower pasture!

That didn’t stop ALLARM though as Sammy and Elise set out to round up volunteers to get all the trees in the ground before the first frost.

Thanks to the help of about 15 Dickinson College students and ALLARM volunteers, 125 holes were dug and every tree got planted, staked, and tubed successfully!

7a. Kelly McIntyre ('14) restabilizes a tree tube.
7b. Isabel Harrison ('16) clears invasives away from the young trees.
7c. Volunteers spread mulch around the young trees.

6a. The planting van filled with supplies… and trees!
6b. Volunteers hard at work finishing the planting!
6c. ALLARMie Caroline Kanaskie ('17) puts the finishing touches on her tree.
6d. Stream Restoration Coordinator Elise plants her first tree.

7. Thanks to the help of about 20 Dickinson College and ALLARM volunteers the spring semester Buffer Maintenance Day went very well.
The Power of the Monitor
by: Maame Akua Marfo

Volunteer monitors are a crucial element to ALLARM’s work and mission to engage communities in monitoring aquatic resources. Engaging individuals in stream monitoring is by far one of the most rewarding outcomes of the work that we do. Not only are volunteer monitors interested in their particular stream’s health, but they are also interested in the environment around them as a whole. They engage with it in diverse conservation and civic ways outside of stream testing from being town council members to leading environmental organizations. Kathy Allio and Joanne Martin are two monitors whose dedication to their local environment and unique combination of interests and skills put them in a position to inspire others to join the fight for healthy Pennsylvania watersheds.

Kathy Allio is a monitor in the French Creek watershed, whose connections to ALLARM extend past her monitoring and into her personal life. Kathy’s daughter, Maggie, is an ALLARM alumna—class of 2005—and this made her familiar with the idea of water monitoring before she even attempted to get involved herself. While her daughter was in school at Dickinson, ALLARM’s focus was watershed technical assistance and it was the final days of the acid rain program, however when Kathy heard the organization’s name mentioned in connection with Marcellus Shale gas monitoring she jumped at the opportunity to become a monitor herself. Her previous years as a Penn State community development educator made her familiar with the way organizations like ALLARM work. This allowed her to appreciate the need to monitor water quality within her own watershed, particularly because a new well pad was operating near her town.

She attended her first training in July 2012 and has been monitoring two different locations for two years. She has used her monitoring as a way to inform people about what she does, and to show both the people who may be drilling in the area and her neighbors what baseline monitoring can do. For Kathy, informing others on what she was doing—collecting conductivity readings with a meter, stream gage meas-
Carmen Mann ('15) holds a rain barrel during the spring rain barrel construction day.

Morissa Glatman ('14) works on a rain barrel during the fall rain barrel construction day.

Max Egener ('16) helps to organize the finished rain barrels.

Joanne Martin and her trusted monitoring partner, Rumi. Photo credit: Will Heindel

ALLARM in Pictures

measurements, and visual observations related to the gas extraction process–helps to share vital information and let the shale companies in her area know that there are concerned monitors who are willing to go the extra mile to keep their streams safe and clear. Furthermore, it provides a means for others to grow more interested in the environment around them, and draw them into protecting it as well.

Joanne Martin has always had a keen interest in the environment. A Cleveland, Ohio native, she moved to Allegheny County, just north of Pittsburgh, three years ago. Her professional focus is on leadership development and helping businesses transition into using more sustainable practices. She became interested in water monitoring as shale gas drilling was increasing across the state and heavily in the southwestern part of the state. An avid horse enthusiast who owns two horses of her own, Joanne wanted to have more of a connection with her environment. By living in a rural community, unlike the city atmosphere she was used to, she found herself wanting to get more involved in the conservation and protection of the natural environment around her. She attained her graduate degree in eco-psychology, and was introduced to the Mountain Watershed Association (an ALLARM training partner) through her graduate work.

She attended her first shale-gas informational meeting in August of 2011, and by December of that year she had attended her first ALLARM training. For her, water is one of the most important resources. Since her first Mountain Watershed Association meeting, she has attended local supervisor drilling meetings, written her thesis on the topic “Equanimity in Marcellus Country,” and organized a group of monitors who all attended the ALLARM training and continue to remain in contact with her. Joanne allowed her passion for the environment not only to drive her to monitor but also to inspire others to monitor as well. She currently evaluates the health of two sites, and has enjoyed the experience of monitoring as it has taught her more about the land she lives on.

Both these monitors have one interesting thing in common, and that is their need to monitor, not just to catch pollution events, but also to be proactive about protecting their waterways. To them their environment is worth protecting, and they are more than up to the task of ensuring that it always is.
A Day in the Lab by: Katie Mattern

A typical day for a lab coordinator can consist of almost anything, from being out in the field collecting samples to running tests in the lab. Even with all of these possibilities, there are two certainties for a day in the lab: dishes and mail! Many dishes are generated by all the quality assurance and quality control (QA/QC) testing we do on water samples sent in by volunteer monitors – the primary function of the lab these days. These samples are collected by community members in both of ALLARM’s technical assistance programs: locally through our Watershed Monitoring Program in five south-central Pennsylvania counties and through our Shale Gas Monitoring Program in Pennsylvania, New York, and West Virginia. The volume of samples we receive from the volunteers explains the large volume of mail. QA/QC testing is completed to ensure that volunteers are using their testing equipment properly and that the equipment is functioning correctly.

For QA/QC, we test the same parameter that the monitors do using the same equipment as the volunteers use out in their streams as well as more sophisticated techniques. For example the Antietam Watershed Association explains the large volume of mail.

It is so gratifying knowing that we are helping to ensure the quality of our monitors’ samples, helping to prepare for shale gas workshops, and making sure that the LeTort Spring Run remains healthy.

For shale gas samples we verify conductivity, total dissolved solids (TDS), and sometimes pH (for our Trout Unlimited partners). Put simply, conductivity is the ability of water to carry an electrical current, whereas TDS is the amount of ions in the water. These two parameters are assessed because flowback water from hydraulic fracturing contains high concentrations of salts and metals, which will increase the conductivity and TDS. After running QA/QC tests, we acidify the samples and send them to a Pennsylvania certified lab to be analyzed for barium and strontium levels. Barium and strontium are two signature chemicals that are unique to flowback water. To perform QA/QC tests in the ALLARM lab, we use the same meter sent samples in where the lab verified that the monitors were using their pH, alkalinity, nitrate-nitrogen, orthophosphate, and turbidity equipment correctly. The bulk of the QA/QC is the non-stop flow of samples from volunteers doing shale gas monitoring.

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Other projects we do in the lab involve testing the level of nitrates, phosphates, and turbidity.
found in the local LeTort Spring Run. Every other month we go LeTort monitoring, where we collect samples from ten different sites and record the dissolved oxygen, temperature, conductivity, TDS, and pH at each site, as well as make any visual observations about the quality of the water. Back at the lab, we then test the level of nitrates and phosphates in the samples using a spectrophotometer. Nitrates and phosphates are an indicator for agricultural run-off and can cause eutrophication in the LeTort. Eutrophication is excess algal blooms in the water that result from an overload of nutrients, which can cause oxygen depletion and lower dissolved oxygen.

Occasionally in the lab, we also prepare QA/QC bottles for our monitors and correct for any equipment variables such as the slight differences in the volume of droppers. We have also previously tested different types of equipment in order to recommend those that are easy to use, accurate, precise, and affordable to our monitors. However, the most common activity we do in the lab is dishes. All of this work creates dishes, so it is no wonder we have to wash them so frequently!

Working in the lab can be a challenge sometimes, but it is my favorite section of ALLARM. It is so gratifying knowing that we are helping to ensure the quality of our monitors’ samples, helping to prepare for shale gas workshops, and making sure that the LeTort Spring Run remains healthy.
The New York Moratorium
by: Samantha Lodge

In 2007, three years after the first successful high-volume hydraulic fracturing (HVHF) well was drilled, the gas rush began in the Marcellus Shale region. On July 23, 2008, New York Governor David Paterson signed a bill into law that called for an updated review on the state’s oil and gas regulations so that it could address HVHF. This bill marked the start of New York’s moratorium on fracking, which has been renewed by the New York Legislature every year since its establishment.

The review began with a Supplemental Generic Environmental Impact Statement (SGEIS), the first draft of which was released in September 2009 by the New York Department of Environmental Conservation (DEC). A few months later, officials in New York City called for a ban on fracking within their watershed area.

In March 2010, the Environmental Protection Agency (EPA) launched a national study to determine the hazards of fracking as a follow-up to their 2004 study that found that hydrofracking did not threaten drinking water.

In December 2010, Governor Patterson vetoed a drilling moratorium prohibiting fracking in New York that was proposed by the state legislature. However, he issued an executive order that put an indefinite hold on fracking until the DEC could complete its environmental review.

One of the biggest confusions to come out of the moratorium is the authority dispute between local and state officials. Local bans in the New York towns of Dryden and Middlefield were upheld by the courts when they were challenged by lawsuits in 2011. These local bans and moratoria eventually spread to more than 100 towns and municipalities.

In April 2011, Cornell University in New York published a study in Climatic Change that estimated that the level of methane released as a result of natural gas drilling would make fracking more harmful to the climate than coal.

In June 2011, the DEC released new hydrofracking recommendations for the New York City and Syracuse areas that suggested drilling be allowed on private land but banned within the New York City and Syracuse watersheds, as well as on state-owned lands.
Following the recommendations, the DEC published the revised draft of the SGEIS in September 2011 and opened it for public comment until January 2012. There were seven large meetings held across the state to discuss the controversial issue, and the report drew tens of thousands of comments for the DEC to review.

The question of health impacts was then addressed in October 2011, when doctors all over the state requested a thorough health impact study be conducted before the moratorium was lifted. Their timing was impeccable, because a few months later, the EPA found links between the chemicals being used in fracking fluid and the contamination of drinking water reserves for the first time in Wyoming. As a result of the health concerns, the DEC requested an independent review of their findings by the Department of Health, which in turn enlisted the help of three outside experts.

In December 2012, the fourth year of the moratorium, the EPA released information regarding their research process and timeline for their review of fracking, but did not release any conclusions or findings. Subsequently, the DEC requested additional time to complete their study through the New York State Department of Health Commissioner, Nirav Shah. As a result, the final regulations were reopened for public comment and the final decision on fracking was further delayed.

The state assembly finally passed a decision on the moratorium on March 6, 2013. In a 95-40 vote, the assembly passed a two-year moratorium that would ban hydrofracking in New York State until May, 2015. Though the bill passed the Democratic-controlled assembly, a similar bill awaits decision in the Republican-controlled Senate, where many think it is unlikely to pass.

Before the moratorium, more than 75,000 conventional oil and natural gas wells were drilled across New York. Of those, about 13,000 of those are still active today with conventional gas drilling practices. Hydrofracking companies and operators are not allowed to continue drilling, and are not allowed to continue using the wells that have already been drilled. Some estimate that, if the moratorium is lifted, New York could eventually witness the addition of more than 50,000 wells.

Many New Yorkers remained concerned over a mix of factors relating to the influx of shale gas drilling. There are social, environmental, and health costs (including the particularly high radioactivity of the Marcellus Shale and its wastewater) to be considered, but they also must be weighed against the economic returns for those who lease their land to drilling companies. Some of the largest water-related concerns are the potential of drinking water contamination and its health impacts, as well as the sheer volume of water required for each well. Disposal and proper treatment of the wastewater also presents a potential problem if it is not handled correctly or proper long-term storage cannot be found. With 80% of New York City’s water coming from the West of Hudson watershed (located in the Catskill region of the Marcellus Shale), one of the questions that will face legislators and citizens alike is “are we ready to take that gamble with the water supply for more than 8 million people?”

Lisa Jackson, former EPA secretary and the 2013 Dickinson Rose-Walter prize recipient, speaks with the ALLARM staff during her visit to Dickinson in the fall.

The ALLARM staff gathers to speak with Lisa Jackson about important environmental issues.

Elise Minichiello (’14) asks Lisa Jackson a question.
Camp D.I.G.  
by: Elise Minichiello

Camp D.I.G. (short for Discover, Inquire, Grow) is Dickinson College’s new outdoor education summer camp for children in the 4th-6th grades. A collaboration of ALLARM, the Center for Sustainability Education (CSE), and the Dickinson College Farm, the pilot summer of Camp D.I.G. in June 2013 had campers gaining a better understanding and application of local resources through hands-on learning. “Camp provided a unique opportunity for our students to serve the community [in an area that wasn’t met],” said Lindsey Lyons, Assistant Director at CSE. “Dickinson students were able develop curriculum, organize camp logistics, educate, facilitate programs, and experience an operating day camp and all its facets.”

To anyone who has ever been involved with a summer camp, you know how much energy goes into giving campers a meaningful experience. Camp D.I.G. started early for the camp director (former ALLARMie Lizzie Harvey ’13) and three full time counselors: ALLARM summer Coordinator Elise Minichiello (’14), and CSE summer interns Anna McGinn (’14) and Madison Beehler (’15). Leading up to camp, extensive scheduling and lesson planning were mixed with conversations about logistics, tough camp issue scenarios, and safety. Lessons on renewable energy, sustainable agriculture, and water monitoring were transformed into age appropriate learning activities for a week of fun and growth. “Camp allowed me to practice teaching sustainability ideas and environmental education in a hands-on way,” says Anna McGinn, “it was rewarding to write curriculum and then carry it out and see how the campers respond and what they retained.”

With the camp housed at the College Farm, each day started off with agricultural chores, like feeding animals, weeding, and harvesting, allowing everyone to get their hands dirty while afternoons encompassed unique sustainability lessons. Camper favorites included building a solar oven to cook s’mores given limited resources, using ALLARM’s stormwater pollution models, and cooking with renewable energy sources from the farm such as biogas (which had campers buzzing that “poop can cook popcorn!” for the rest of the week). “Many campers said their least favorite activity was the food map game,” said Elise Minichiello in regards to a running game about food miles and the

“Traveling to the stream gave the campers a change of setting and they loved the hands-on activities. It was cool to interact and play with them in the water. Their curiosity and excitement really showed when we set them loose to splash around and explore the area.”
energy consumption in the food system. "The fact they said it was too tiring may have been a complaint for them, but it made me realize our message got through. Maybe next time they go to the store they'll remember how tired they got and choose the local option..."

ALLARM played a special role in Camp D.I.G. most notably through “Water Day.” Both Wednesdays, campers were driven to the local Yellow Breeches Creek where they were met by ALLARM summer coordinators Kelly McIntyre ('14) and Tabea Zimmermann ('15) for a day of stream exploration. Given a “field notebook,” campers set out to determine the overall health of the Yellow Breeches by looking for the obvious and maybe not-so-obvious parameters of stream health that ALLARM teaches its volunteers at workshops across the state.

Campers “put on their lab coats” to get a glimpse at what the ALLARM lab coordinators do, testing water samples for everything from pH to dissolved oxygen. In the afternoon, Camp D.I.G. water monitors couldn’t get enough of the macroinvertebrates. After learning how to preform collection “kicks,” they were taught how to ID the macro based on pollution tolerance levels and were given time to look at them under microscopes. "Traveling to the stream gave the campers a change of setting and they loved the hands-on activities," said Tabea Zimmermann, “it was cool to interact and play with them in the water. Their curiosity and excitement really showed when we set them loose to splash around and explore the area."

With visual, chemical, and biological stream assessment techniques, Water Day completely immersed campers into the world of volunteer stream monitoring and gave them an all-encompassing look at what it really means to care for a stream. Campers showed off all their enthusiasm and hard work at the “end of camp showcase”. Each Friday, over fifty family, friends, Dickinson interns, and campers were invited to enjoy a local, camper-cooked pizza lunch and presentations on the week’s activities. Nature art was hung, solar ovens were put on display, and camper guided farm tours were enjoyed by all. Fridays were not only a day for rewarding counselors, but for rewarding campers who each lit up talking about a part of their camp experience that had excited them. The power of this day wasn’t overlooked by parents either as one commented, “the [campers] seemed to really learn through the week rather than just repeat what was told to them.”

One parent’s comment that summed up Camp D.I.G.'s mission was that her son “learned so much each day [he] would follow up with reading about it at home.” This statement validated all the time, energy, and effort put into Camp D.I.G. If just one camper came out of the week with a stronger appreciation and sense of stewardship for the environment, then the camp did its job.

Looking forward, Camp D.I.G. will take on its second summer in June of 2014 with a revamped, refined curriculum sure to please as much if not more than before. Thanks to the hard work of staff and the success of the pilot summer, Camp D.I.G. will continue to provide the future environmentalists of the Cumberland Valley with an outlet for exploration and growth.
The clouds darken, the cold air swirls, droves of snowflakes gather, and then trucks with plows and salt make the roads clear again. We have witnessed this progression of a snowstorm so often that seeing a road covered in chunks of clear or colored salt has become something of a tradition after a winter storm. This is especially true during the 2014 winter when Carlisle, along with most of the northern United States, was repeatedly blanketed with several major snow storms. This was why the Borough of Carlisle eventually used up all of its salt reserves, and also why one environmental science class measured a conductivity of over 13,000 µS/cm in the local Mully Grub stream in February 2014.

The industrial use of deicers began in America in 1941, when the United States Department of Transportation began using sodium chloride (the primary ingredient in road salt) as a de-icing agent, spreading only 5,000 tons nationwide (Kelly et. Findlay 2010). Since then, salt has been a reliable way to keep drivers safe when out in icy conditions and, according to a study by Marquette University, has reduced vehicle crashes by 88% (Kuemmel et. Hanbali 1992). This would explain why the United States currently spreads between 10 and 20 million tons of salt annually (Kelly, Findlay, Schlesinger, Chatrchyan, and Menking 2010).

Road salt is such a lifesaver because like most salts, sodium chloride easily dissolves in water. When it comes into contact with ice under the right conditions, the salt breaks apart into sodium and chlorine ions. The ions (charged atoms) of the dissolved salt want to push apart the many closely-bound water molecules, making the water molecules more able to move around and thus more able to become liquid water. This lowers the standard freezing point of water (32°F), allowing ice and snow on the road to melt at lower temperatures (around 15°F). This phenomenon, known as a freezing point depression, is why we put antifreeze in cars and use salt for making ice cream.

The increased application does however have negative consequences; salt is known to damage bridges, sidewalks, roads, nearby plant and animal communities, ground and well water reserves, and aquatic ecosystems (Corsi & Graczky, USGS). The problems arise after the salt dissolves with the melted snow and ice. The salt dissociates into sodium and chlorine ions in the solution and around 45% of the salt travels through soils and into groundwater aquifers and roadside vegetation, and approximately 55% of road-salt are transported in surface runoff (Church & Friesz, 1993).

The salty solution poses significant health concerns for people due to the increased groundwater and well water contamination associated with increased road salt use. A USGS study on wells in Madison, Wisconsin found that foreign sodium and chlorine levels have been steadily increasing since 1975; this has led to a number of wells being replaced, costing around $3.5 million annually (Corsi & Graczky 2006). This especially threatens the nearly 25% of Americans who suffer from hypertension, which requires them to have a low sodium diet (Transportation Research Board, 1991). Even more troubling then is the concern that salt levels in reservoirs across the country are exceeding the level that can be removed at filtration plants (WBAL 2014).

Additionally, the increased salinity of a body of water puts the general health of surrounding organisms at risk. It is well documented that chlorine can be toxic to fish, macroinvertebrates, and aquatic plants and that many freshwater organisms can only survive within a narrow threshold for salinity levels, so the increase in
sodium chloride ions in the water has many worried (Department of Environmental Services 2011).

Current studies on the long-term effects of road salt on aquatic ecosystems have been mixed. One study found that while there are acute increases of sodium and chlorine ions in waterways, these increases have no lasting impact on the aquatic communities (DES 2011). Another study says that ant colonies actually benefit from greater amounts of salt (Smithsonian 2010). Other studies however found that increased salt use has had a detrimental effect on organisms (DES 2011).

There is a variety of possible solutions to mitigate these problems. There are alternatives to using sodium chloride, such as acetate, which is far less mobile than sodium chloride, but also much more expensive (Kuemmel et. Hanbali 1992). Some cities are trying to use beet juice or molasses derivatives as alternatives to sodium chloride and while these new methods appear to be promising for small-scale applications, both are not yet ready to be used for large-scale applications. The most feasible solution right now would be for salt-laying trucks to strictly adhere to the best management principles outlines by the Department of Transportation. Other improvements to the current system include using GPS sensors to better coordinate responses and constructing salt drainage pools in critical cites.

The overall effects of road salt usage are still not well understood. Going forward, it is important to be mindful of what and how much deicer we should use while also still being able to ensure the safety of the roads during and after winter weather.

References:


As I sit at my favorite office computer watching new first years file in for their ALLARM interviews I can’t help but flash back to 2011 when I was in that same position. I originally heard about ALLARM on an accepted students day and immediately knew I wanted to be an ALLARMie. Four semesters and two summers at ALLARM later, it’s hard to imagine my college years without this organization. I have had too many memorable and meaningful experiences at ALLARM to count that have impacted the student, educator, and citizen I have become.

From developing an infatuation for macroinvertebrates, to working on stream restoration and planting trees, a summer filled with shale gas research and workshops, to being a counselor at Camp D.I.G., working at ALLARM has provided me with a unique and diverse skill set for community engagement I will be forever grateful for. Through such an open and fun work environment, the professional and personal growth I have seen in myself is truly amazing. I went from being a shy sophomore who was nervous to ask for help to a senior who sometimes has a hard time being quiet, constantly engaging with fellow staff, transitioning from employee to a true colleague.

I speak for the entire staff when I say all ALLARMies engage in a type of thinking and doing that not many undergraduates are lucky enough to have. I knew I wanted to major in environmental science before coming to Dickinson but didn’t have a real direction to take it until working for ALLARM which has done its job, and then some (and then a lot more) in preparing me to graduate with real world experience and skills I cannot wait to share with the greater environmental education community.

Watch out (insert future job here), I’m coming at you ready to educate, engage, and empower thanks to my incredible years at ALLARM!
I am not a science person. I haven’t worn a lab coat since secondary school, and before January 2012, you would have had to pay me copious amounts of money to even approach a test tube. None of this stopped me from applying for a job at an organization that revolved around citizen science, and I am all the better for it. My experience at ALLARM, beakers, meters, and all, has been one of the most rewarding experiences of my life. The organization’s ability to provide empowerment and information to communities all across Pennsylvania, New York, and West Virginia has left me in amazement as an observer, and with a deep feeling of privilege in having been a part of it in its accomplishments over the past two years. Though I may still eschew lab coats, my perspective of them has changed. Through presentations and conversations, I have realized that I have come to put on the proverbial lab coat from time to time. I have realized the importance of citizen science and coordination between science and it’s ability to provide some form of power to those who feel they have lost theirs. ALLARM has been one of the most important parts of my life at Dickinson College, and has helped shaped my outlook in surprising ways. I will never forget my experiences here—and I will miss it dearly.

Maame Akua Marfo

Kelly McIntyre ('14) has a good time stabilizing the young trees at the spring Buffer Maintenance Day. Elise Minichiello ('14) holds a tree that came out of the ground. Have no fear, though; it was replanted! Teamwork at the Buffer Service day! Director Julie Vastine and Caroline Kanaskie ('17).
Khushaal Talreja, Julie Vastine, Andrew McGowan (‘16), Carman Mann (‘15), and Max Egener (‘16) prepare to leave for a shale gas workshop.

Allarm in Pictures

My four years at ALLARM have been a defining aspect of my undergraduate career. My time at ALLARM has shaped my life, both professionally and personally. I loved the time that I spent with my co-workers and the directors as well as the individuals that I met at monitoring workshops. My work here has allowed me to experience and witness firsthand the importance and power of grassroots work and community activism. By working with the Public Education and Outreach, Stormwater, Environmental Education Programs and running staff meetings, I have learned the art of effective communication, of being a leader, and I was able to find my voice.

I built relationships that I would forever be grateful for. Every semester I was able to meet both my personal and professional goals from learning a new program to organizing the LeTort Service Day. My time at Dickinson would not have been completed had I not been lucky enough to join the ranks of those that work for ALLARM. This is a bittersweet moment as I say my final goodbyes, but I know that the staff and directors will continue to do amazing epic things!

Morissa Glatman

It is difficult to adequately describe my three semesters at ALLARM in just one reflection. I would not be where I am in life without my time at ALLARM, and for that, I am extremely grateful.

During my sophomore year at ALLARM I was an Environmental Education coordinator. I also facilitated at a shale gas monitoring workshop in Potter County. Both these experiences early on in my college career catapulted and led me down a path of environmental education that I still pursue today and will after graduation. Not only did these experiences help me realize my future plans, but they also provided me the tools and capabilities to actualize these new goals.

One of Dickinson’s mottos is “being an engaged citizen.” Connecting with the Carlisle community this year by working on the Stormwater team to organize the fall rain barrel workshop has taught me what that phrase means in practice. This experience and others that I’ve had while at ALLARM has developed my understanding of how to empower others with the knowledge and tools to be environmental stewards.

Before entering Dickinson my father gave me this one piece of advice: Going to college is actually about learning how to communicate effectively. This is something that I’ve been able to put into practice while working at ALLARM. ALLARM has enabled me to build a professional skill set that is still unparalleled to any other experience that I’ve had on campus. I know that the skills that I developed at ALLARM will carry me through my future career.

I am so thankful and grateful for the support of my colleagues and for the energy, enthusiasm, and humor that they brought to our work together. I will miss working with them, but I am happy with the knowledge that they have an amazing road ahead of them.

Shanice Grant

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Kelly McIntyre

Upon my arrival at Dickinson I had not the slightest idea that I would be interested in working for an environmental organization. Over the first two years it became quite evident that it is something that I am passionate about. At the end of my junior year I finally really discovered ALLARM and fell in love with the mission of the organization. I was fortunate enough to have the opportunity to work full time over the summer and both semesters my senior year.

I started as an Environmental Education Coordinator but was given the opportunity to grow and immerse myself in all content areas of the organization. The two main positions I ultimately found myself working were Shale Gas and Lab Coordinator, both of which have heavily informed my passions and what I see myself doing post-graduation. The most impactful experience of my ALLARM experience would have to be helping to facilitate the shale gas monitoring workshops, which empower local communities with scientific tools and knowledge to assess their streams for impacts from shale gas extraction. From these experiences I have solidified my interest in community organizing on matters regarding the environment.

My time at ALLARM has provided me with the necessary skill sets to pursue anything I wish from this point on. I feel so lucky for the opportunities I have been given, the professional skills I have developed, the relationships I have made, and ultimately the new family I have grown to love.

2013-2014 Staff

Back Row: Assistant Director Jinnie Monismith, Adrienne Brown, Isabel Harrison, Director Julie Vastine, Kelly McIntyre, Science Advisor Candie Wilderman, Elise Minichiello; Front Row: Max Egener, Maame Akua Marfo, Carmen Mann, Caroline Kanaskie, Emily Kapilta, Andrew McGowan, Katie Mattern, Shanice Grant, Assistant Director of Outreach Katie Tomsho; Not Pictured: Samantha Lodge, Morissa Glatman