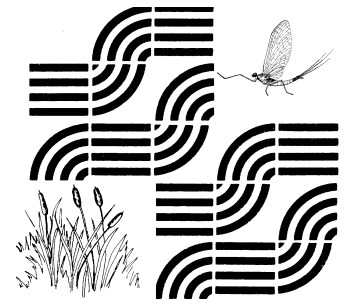


# Adopt-A-Stream

Volume 25, Number 1 January – March 2018  
*Adopt-A-Stream Staff, Editors*



Department of Natural Resources  
Environmental Protection Division

## Celebrating 25 Years of Protecting Georgia's Waterways!



In 2013, Georgia Adopt-A-Stream celebrated its 20<sup>th</sup> birthday as the state's volunteer water quality monitoring program, protecting Georgia's waters from the mountains to the sea. Since then, volunteers, trainers, program partners and participants have greatly grown the program and have exceeded AAS' five goals of increasing awareness, collecting water quality data, gathering observations, creating partnerships and providing tools and training. The previous 20<sup>th</sup> birthday AAS timeline can be found in the [May-June 2013 AAS Newsletter](#) on our website.

Since 2013, the AAS community has achieved the following:

- Volunteers: Grew from 18,000 to 26,717
- Monitoring Events: Grew from 20,248 to 48,427
- Active Sites: Grew from 1,102 with a current total of 2,417
- Data Points: Total has increased by ~120%! (107,715 to 236,991)

**2013**

Anne Stahley hired as State Coordinator

**2014**

● **25,000 Volunteers Reached!**

Seira Baker hired as State Coordinator



**5th Annual Confluence!**

In 25 years, AAS has conducted 327 Trainer workshops certifying 866 trainers which resulted in 3,409 QA/QC workshops and 33,170 QA/QC certifications!

**2015**

● **1,500 Sites Adopted!**

Chelsea Hopkins hired as State Coordinator

● **135,000 Data Points Reached!**



**These accomplishments would not have been possible without you! Thank you for making AAS what it is today!**

**2016**

● **2,000 Sites Adopted!**

● **30,000 Volunteers Reached!**

Meredith Whitten hired as State Coordinator



**Received Vision Award at the National Water Quality Monitoring Conference!**

**2017**

● **800 AAS Groups!**

● **190,000+ Data Points Reached!**

Mary Lou Hoffacker hired as State Coordinator

**NEW Database & Website Launched!**



**"Our current motive to observe and monitor streams is a continuation of our inclination to observe, understand, and live in consonance with our environment." ~ Ted Mikalsen, manager for first state coordinator**

# Adopt-A-Stream by the Numbers 2017

Georgia Adopt-A-Stream would like to extend our sincerest gratitude to our remarkable volunteers, trainers, community coordinators, advisory board members and partners for their support and dedication to the program. Because of all of you, Adopt-A-Stream remains a leader in volunteer water quality monitoring and continues to grow after 25 years! Together, we contributed more than 24,000 hours of service this past year worth over \$580,000 in volunteer dollars protecting Georgia's waterways!



**Thank You for Another  
Great Year!**



- ✓ **New Partnerships**
- ✓ **New Website & Database**
- ✓ **New Programs in Neighboring States**
- ✓ **Record Number of Monitoring Events!**

## New in 2017



## Yearly Totals



**Do you need monitoring equipment?** Ben Meadows graciously offers 10% off their products to Adopt-A-Stream volunteers. Enter discount code TSDNR18 at checkout. Code expires 12/31/2018. [www.benmeadows.com](http://www.benmeadows.com)

# *Green Infrastructure in Your Community*

Green infrastructure is an approach to water management that incorporates both the natural environment and engineered systems to reduce runoff and nonpoint source pollution, conserve ecosystem functions, and provide a wide array of benefits to people and wildlife. Green infrastructure solutions can be applied on different scales, at the home or building level or through low impact development. At the local level, green infrastructure practices include rain gardens, permeable pavements, green roofs, infiltration planters, trees and tree boxes, and rainwater harvesting systems.



At this year's [Confluence](#) conference, a two part session titled "Green Infrastructure at the Local Level: Sustainable Stormwater Management in Your Community," will explore innovations in green infrastructure practices. Selected speakers will discuss current green infrastructure projects in Metro Atlanta communities. More information about green infrastructure can be found on the [A Guide to Stream Care in Georgia](#) page of the AAS website, which includes the [Life at the Water's Edge](#) brochure.

## *Gwinnett Environmental & Heritage Center*

Sandy Aceto, Science Program Supervisor, GEHC

The Gwinnett Environmental and Heritage Center (GEHC) opened in 2006 as a multi-use science, history, cultural, heritage, and environmental facility. It is located on a 700 acre campus with green space and more than 10 miles of walking trails, as well as a 66,000 square foot educational building. The GEHC was Gwinnett County's first LEED (Leadership in Energy and Environmental Design) gold certified building. Its distinctive design includes a one acre vegetated roof with over 40,000 plants.



GEHC provides an opportunity for more than 118,000 students and community members to participate in interpretative, hands-on field studies and educational programming annually. A field study experience for elementary and middle school students at GEHC involves hands on experiences with permanent and changing exhibits, inquiry based learning, STEM instruction and

laboratory study opportunities. Students are encouraged to investigate and implement service based projects that build environmental literacy, increase technological applications and showcase skills necessary for preparation as members of the workforce. The field study program meets the Georgia Performance Standards and Academic Knowledge Skills (AKS), specific to Gwinnett County Public Schools. In fact, the program covers the major concepts of life, physical and earth sciences, and integrates them into an interpretive-based environmental education context. Extended study programs for high school students include Advanced Placement Biology Labs, Water Quality Field Studies, TreeTop Quest Physics and Forest and Stream Adventure programs.

As a part of this year's Confluence there will be a a tour of green infrastructure installed at the Gwinnett Environmental & Heritage Center, a LEED certified green building. This tour, combined with a guided tour of the F. Wayne Hill Water Resources Center, exposes visitors to the unique energy and power systems of these state-of-the-art environmental facilities.

## *Another Successful Year for Rivers Alive*

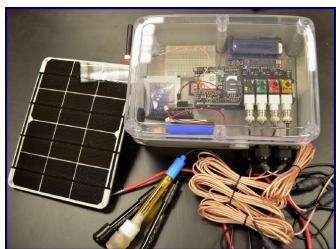
2017 was an outstanding year for Rivers Alive! The education theme was 'I <3 Georgia' and focused on the importance of preserving the 70,250 miles of rivers and coastline that make up Georgia's waterways, as well as the many services they provide us with. This year's poster included an activity called 'The Watershed Tarp' that was created to educate people about what a watershed is, how to identify the physical boundaries, and how our daily activities contribute to the nonpoint source pollution in our state's waterways. Despite the inclement weather, our dedicated organizers helped facilitate almost 300 events in 2017. In just one year, over 26,000 volunteers cleaned nearly 1,600 miles of Georgia's waterways, removing over 422,000 pounds of trash. That's 3,500 more volunteers than last year! Thank you for all of your hard work, and we hope you will continue to support Rivers Alive and preserve your local waterways.



# Remote Water Quality Monitoring Sensors: US EPA & Stroud Water Research Center

Throughout the past year, Georgia Adopt-A-Stream partnered with two groups developing affordable, DIY, open source, remote water quality monitoring sensors. The aim of these programs was to provide two hands-on technical workshops for active participants in AAS as well as continuing technical and monitoring support. As these programs develop, AAS looks forward to sharing more information on emerging technologies in water quality monitoring.

## US EPA – Nathan Barlet, Environmental Engineer, Science and Ecosystem Support Division



In January 2018, the Region 4 Environmental Protection Agency (EPA) lab hosted an “Open Source Sensor Design Workshop for Continuous Water Quality Monitoring” through the EPA Office of Research and Development 2017 State Innovation Projects initiative. With support from the Georgia AAS program they accepted around 30 individuals, with monitoring experience, from throughout the southeast and provided them with a crash course in the design of continuous water quality sensors utilizing open source technology. Technologies such as Arduino-based microcontrollers combined with inexpensive water quality probes provide citizen scientists and watershed monitoring organizations with low-cost alternatives for collecting continuous environmental data. Workshop participants gained insight on the topic of continuous and remote water quality monitoring, as well as an overview of how to build a low-cost water quality sensor for measuring key parameters with data logging and cellular telemetry capabilities using open source technology.

During the workshop, each group was given a set of tools and parts and instructed on how to build their own sensor capable of measuring pH, temperature, dissolved oxygen, and conductivity. A total of fifteen sensors were assembled and provided to monitoring groups during the workshop and participants were instructed on deployment and upkeep of these sensors, which they are expected to maintain for at least one year at one of their currently active monitoring sites. Each group is expected to provide feedback to the U.S. EPA on the use and feasibility of open source sensor technologies and citizen-based continuous water quality monitoring. Join Nate Barlet this year at [Confluence](#) for a two hour session discussion about these remote sensors.



## Stroud Water Research Center – Tara Muenz, Assistant Director of Education



In the summer of 2016, Stroud Water Research Center was awarded a 2-year EPA National Model Environmental Education grant to develop and bring forth a sustainable and replicable model program for community stakeholders, including adult learners, teachers, and students with DIY technology, techniques, training, and curricula focused on water quality monitoring. These tools will enable users to collect advanced water quality information on threatened and impaired waterways throughout the U.S. while also teaching critical thinking skills and data interpretation.

To achieve these goals, the Stroud Center has been conducting workshops across 5 EPA regions and has awarded sub-grants at different levels of funding to watershed organizations and schools to enable them to collect real-time water quality information on a water body of importance through a ‘sensor station.’ The sensor stations can be equipped with conductivity, temperature, and depth sensors, as well as turbidity sensors, with the foundation of the sensor station being the Mayfly Data Logger board, a powerful, user-programmable microprocessor board that is fully compatible with the Arduino IDE software. The Mayfly logs all data produced by the sensors and transmits it via cellular networks to a website where the data are automatically graphed and can be downloaded for further analysis.

The 2-day workshops integrate the use of these rapidly emerging/expanding technologies in open-source electronics, cyber-infrastructure, and data management tools for community scientist and school programs. Curricula and workshops enable participants to build, deploy, and manage wireless environmental monitoring stations along selected waterways of the U.S. and to interpret and communicate monitoring results that ultimately support environmental stewardships.



To date for this grant, Stroud has deployed 11 sensor stations, trained 25 teachers and engaged over 60 citizens in 2-day training workshops in six states including Georgia. To find out more about this program and the Mayfly logger, visit the environmental DIY forum at <https://envirodiy.org/mayfly/>.

## *Board Member Highlight: Erin Lincoln, Tetra Tech*



To view some of Erin's photography visit her website [www.erinlincoln.com](http://www.erinlincoln.com).

Erin Lincoln first volunteered with Georgia Adopt-A-Stream (AAS) back when she was in high school, where she sampled water quality and collected macroinvertebrates in Sope Creek in Marietta. That early experience introduced her to the field of water resources, and she was hooked. She went on to receive her bachelor's degree in Water and Soil Resources (now Natural Resource Management & Sustainability) from the University of Georgia, and her master's degree in Forest Biology from Virginia Tech. Erin continued sampling streams in college and graduate school and also started volunteering for river and wetland cleanup days.

Erin, a Professional Hydrologist, is a project manager at Tetra Tech in Atlanta, Georgia. She oversees the watershed modeling group and also works on watershed planning projects throughout the United States. Currently, she and her team are identifying preferred habitat locations for oyster restoration in Mississippi, assessing sediment impacts from coastal wind farm installations in Massachusetts, developing temperature water quality models for the Columbia River in Washington, and evaluating dissolved oxygen mitigation success in the Savannah River.

Due to her professional and volunteer experience, Harold Harbert asked Erin to serve on the AAS board and Confluence conference planning committee. She has thoroughly enjoyed attending Confluence over the last four years where she has listened to and learned from a myriad of talented guest speakers. Erin believes that this type of community engagement and education is needed to help ensure that Georgia's water resources are protected for future generations.

## *Thank You Active 2017 Trainers!*

Trainers who led at least one QA/QC workshop in 2017

Alexa Robinson	Erik Fyfe	Jessica Warren	Meredith Whitten	Ruth Mead
Amos Tuck	Erika Hollis	Joseph Rigdon	Michael DeLisle	Sarah Sweat
Ben Maher	Frank Carl	Julie Shutters	Michael O'Shield	Seirisse Baker
Beth Button	Ganesh Venugopal	Kaitlin Warren	Michael Meyer	Shelly Krueger
Bob Bourne	Harold Harbert	Kaleigh Sims	Michele Smith	Sonya Wood Mahler
Bob Schmitt	Hayley Wise	Kate Mowbray	Mike Kahle	Sumner Gann
Brian McKnight	Jack Turner	Kathy Ferrell	Obby Tapley	Tamela Mills
Brian Wiley	Jacob Oblander	Kevin Smith	Rachael Thompson	Terry Porter
Bruno Giri	Jan Mackinnon	Laura Schneider	Raleigh Keagan	Tom Weiland
Callie Moore	Javier Sayago	Lori Forrester	Rick Frey	Tyler Sims
Charles Nimmo	Jennifer McCoy	Lori Watterson	Robert Hodgdon	Vicki Culbreth
Checo Colon-Gaud	Jesse Demonbreun-	Luke Roberson	Robert Thompson	Vicki Soutar
Deborah Ortiz	Chapman	Margi Flood	Rocky Nation	William Lott
Duncan Hughes	Jessica Sterling	Melissa Echevarria	Ruth Eilers	Yvette Wise

## *Welcome New Adopt-A-Stream Trainers in 2017*

New trainers who led at least one QA/QC workshop in 2017

Checo Colon-Gaud	Hayley Wise	Joseph Rigdon	Luke Roberson
Erik Fyfe	Jacob Oblander	Kaitlin Warren	Raleigh Keagan
Ganesh Venugopal	Javier Sayago	Laura Schneider	Robert Thompson

The preparation of the Georgia Adopt-A-Stream quarterly newsletter is financed in part through a grant from the US Environmental Protection Agency under provisions of Section 319(h) of the Federal Clean Water Act of 1987, as amended. For more information about the Georgia Adopt-A-Stream program or to contribute to the newsletter, contact:

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**AAS Staff:** *Harold Harbert, Seira Baker,  
Mary Lou Hoffacker and Lina Yazbak*

**GO BLUE!**

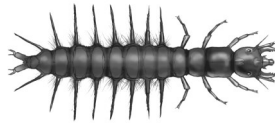
Sign up for our e-newsletter  
by emailing us at  
[AAS@dnr.ga.gov](mailto:AAS@dnr.ga.gov)



Dragonfly



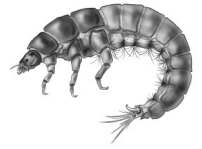
Riffle Beetle



Dobsonfly



Stonefly



Net Spinning Caddisfly

## CONFLUENCE 2018: MARCH 23-24

ADOPT-A-STREAM ANNUAL CONFERENCE

*Friday evening: Water Science Poster Session and Social*

*Saturday: Water Quality Workshops, Exhibits and Awards Ceremony*

**KEYNOTE SPEAKER: DR. CAROL COUCH, EXECUTIVE DIRECTOR,  
PHINIZY CENTER FOR WATER SCIENCES**

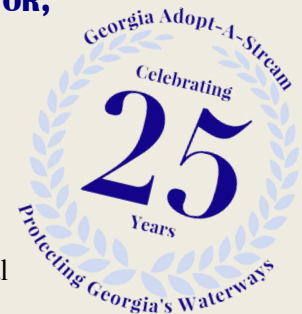


**REGISTER NOW!**

**Registration deadline is Tuesday, March 20th**

*Deadline for t-shirt orders is Friday, March 16th at noon*

\$30 registration ~ \$20 for students with ID ~ \$10 for Friday Social  
~ Gwinnett Environmental & Heritage Center in Buford, GA ~



*There will be no on-site registrations.*

*For more information, visit the [Confluence](#) page on the AAS website.*