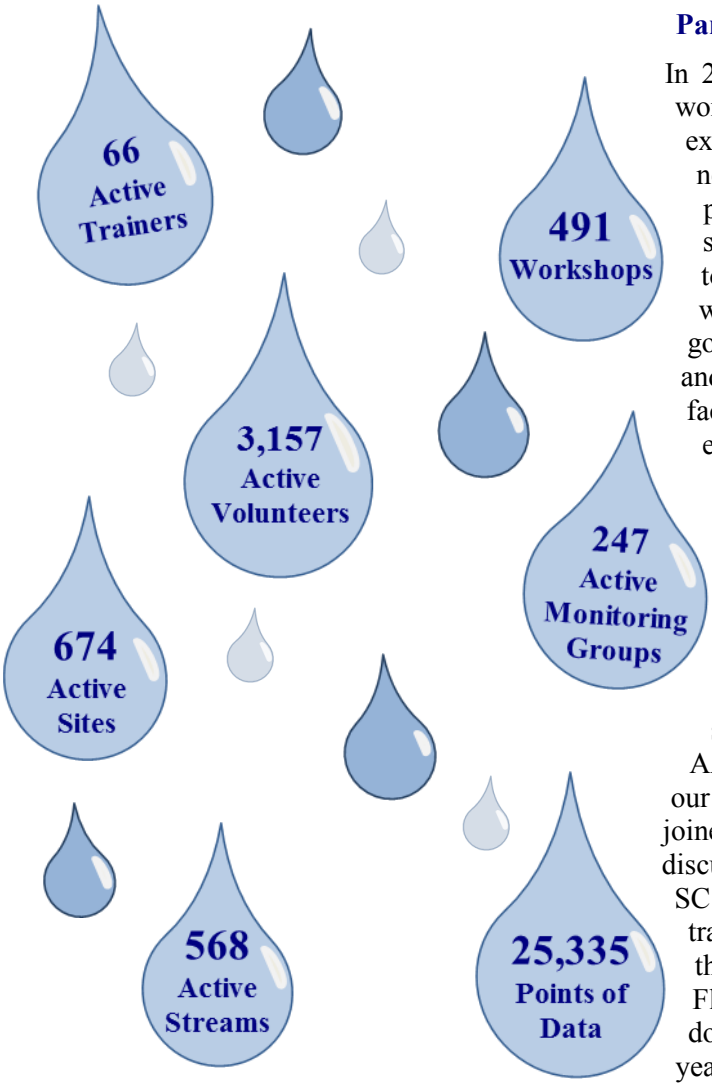
GEORGIA
Adopt-A-Stream

Volume 23, Number 1 January—March 2016
Adopt-A-Stream Staff, Editors

Department of Natural Resources
Environmental Protection Division

Adopt-A-Stream by the Numbers 2015

Georgia Adopt-A-Stream would like to extend our sincere 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 22 years! Together, we exceeded the five AAS goals in 2015 and contributed more than 27,000 hours of service worth over $620,000 in volunteer dollars protecting Georgia's waterways!



Partnerships and Local Adopt-A-Stream Programs

In 2015, Adopt-A-Stream worked hard to grow existing and establish new local AAS programs all over the state while continuing to enhance partnerships with nonprofits, government agencies, and universities. We facilitated water quality events in student competitions with Envirothon and Georgia FFA this year and hosted a three-day chemical, bacterial and macroinvertebrate workshop for agriculture teachers.

Out-of-state Adopt-A-Steam partnerships and local programs also continued to grow in 2015! North Carolina volunteer monitoring leaders are looking into starting a statewide monitoring program and they invited AAS staff to a symposium in Chapel Hill, NC to showcase our mature, active, statewide monitoring program. We also joined AAS trainers and coordinators in South Carolina to discuss the history and structure of Georgia AAS, as well as SC program goals, sustainability and growth. Five new trainers from SC were trained and held their first workshops this year, co-training with current SC AAS trainers! In the Florida Keys, the AAS program continues to expand with double digit growth of active monitoring sites during the year. And, for the first time, Tennessee has a certified trainer and active monitoring sites!

Thank you for all of your efforts that make a difference in the quality of our waterways!

Adopt-A-Stream by the Numbers 2015, continued…

If you've been through an AAS workshop, you know our goals by heart. Raising **awareness** about water quality issues, collecting quality baseline **data** and **observations** of conditions in local streams, wetlands, lakes and estuaries, creating **partnerships** with local governments and organizations, and providing the **tools and training** to take action—it takes an enthusiastic and committed team to accomplish the Adopt-A-Stream goals as we did in 2015!








Welcome to the community of over 3,000 active Adopt-A-Stream monitors!

On behalf of the entire program, we would like to send a cheerful welcome to our new volunteers and monitoring groups as well as a big thank you to those that expanded their reach and added new monitoring sites in 2015!

497 NEW Active Volunteers
83 NEW Monitoring Groups
241 NEW Monitoring Sites
168 NEW Streams

All of these numbers are new records for participation in a calendar year!

Volunteer retention improved as existing volunteers continued their monitoring efforts into 2015!
Around 85% of AAS active volunteers in 2015 also monitored in 2014!

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Our **first annual AAS Student Poster Competition** was a great success at Confluence 2015!
Read about the winners' projects on the Science & News page.

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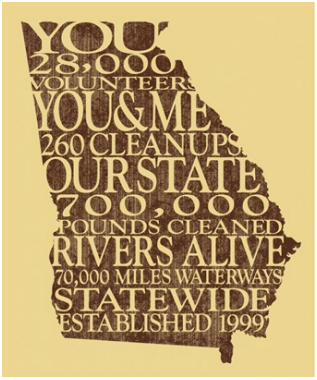
Over HALF of our nearly **10,000** newsletter recipients now receive the e-newsletter version. **GO BLUE!**
Let us know if you want to switch to e-newsletter to receive all the same news while conserving our natural resources!

Rivers Alive

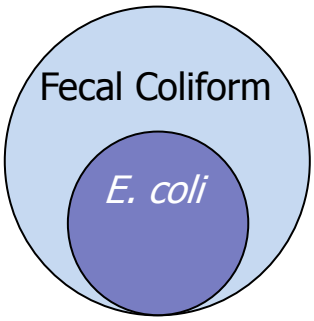
The education theme for Rivers Alive in 2015 focused on the journey trash takes in Georgia. Cleanup organizers and volunteers were encouraged to take count and record, as best as possible, the diversity and variety of trash removed from our rivers, lakes and coastal waters. Considering the particularly wet fall weather conditions when the most cleanups are scheduled, our impressive numbers point towards the resilience of the program; it was another successful year for Rivers Alive. Over 250 cleanups across Georgia engaged more than 25,000 volunteers resulting in over 500,000 pounds of trash removed from our waterways! Throughout 17 years of Rivers Alive cleanups, over 9.8 million pounds of trash have been removed!



Do you need monitoring equipment? Ben Meadows graciously offers 15% off their products to Adopt-A-Stream volunteers. Enter discount code TSDNR16 at checkout. Code expires 12/31/2016. www.benmeadows.com

Rainy Weather and Bacterial Monitoring

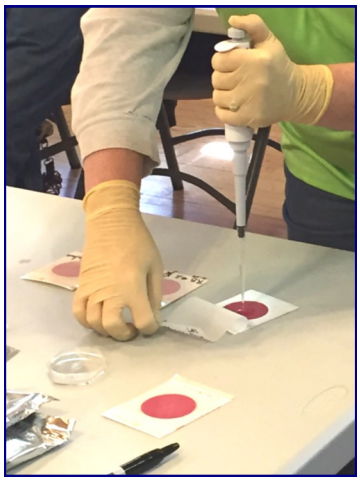
Bacterial monitoring, one of Georgia Adopt-A-Stream's three QA/QC programs, allows volunteers to quickly assess health risks due to bacterial contamination of surface waters. Bacteria are microscopic, single-celled organisms that constitute more of Earth's biomass than that of plants and animals combined. They are so small that five million could be placed on the head of a pin. Although bacteria often get a bad rap, they are essential for life! They are responsible for important processes such as digestion, decomposition, nutrient cycling and the breakdown of environmental toxins. However, some bacteria are pathogenic, or capable of causing disease, and therefore can be harmful to our health.



E. coli as an indicator

Fecal coliform are a type of bacteria that live in the intestinal tract of warm-blooded animals. Human sources could include failing septic tanks, leaking or overflowing sewer lines and urban stormwater runoff. Possible animal sources of fecal coliform could include livestock with access to streams, dairy or poultry operations, wildlife and pet waste from parks and lawns. AAS volunteers look at the levels of one type of fecal coliform, *Escherichia coli* (*E. coli*), in waterways. There are numerous strains of *E. coli*, however, and not all are pathogenic. The US EPA recommends *E. coli* bacteria as good indicator organisms of fecal contamination because they are associated with warm-blooded animal waste, generally live longer than pathogens, are found in greater numbers and are less risky to culture than pathogenic bacteria. Therefore, presence of *E. coli* bacteria in waterways indicates the *possible* presence of pathogens.

Monitoring for *E. coli*



Using a Whirl Pak®, or sterile bag, AAS volunteers take a grab sample at their monitoring site and place it in a cooler. Back at home, samples are plated using 3M Petrifilm™ plates and incubated for 24 hours at 35°F (to grow with ideal nutrient and temperature conditions). *E. coli* colonies appear on the plates as blue dots with entrapped gas bubbles. These colonies are counted and the resulting level of *E. coli* present is expressed as colony forming units per 100 mililiters (cfu/100mL).

The US EPA has developed recommended limits of *E. coli* in recreational waters based on the designated use of the waterway which correspond to an acceptable risk level of 8 people out of 1000 getting sick. For designated swimming areas, the recommended single maximum allowable count is equal to or less than 235 cfu/100mL. Although *E. coli* counts exceeding 235 cfu/100mL are considered "high" and should be closely observed, most waterways that AAS volunteers monitor are not designated for swimming. AAS suggests that when results exceed 1000 cfu/100mL, special action should be taken to resample and/or alert your local watershed group or water authority of the issue.

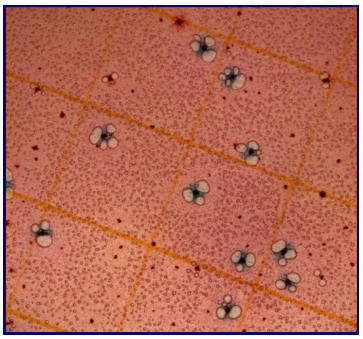
What happens when it rains?

Georgia Adopt-A-Stream advises that sampling for *E. coli* should be done monthly during base flow conditions. This allows for the development of baseline trends and for the comparison of a site's bacteria levels over time. However, we had a pretty wet fall and start of winter, so what happens when it rains? Bacterial levels often increase after heavy rain events that wash nonpoint source pollution quickly into storm drains and waterways, bypassing critical buffer areas that filter out pollutants. Wet weather sampling can be used to provide different insight than dry weather sampling. In urban areas, high *E. coli* levels could indicate leaks in sewer lines or sewage overflows. In more rural areas, high levels could be caused by failing septic systems, wildlife or runoff from livestock or farming operations.

AAS does not recommend it, but if you decide to monitor during or immediately following rain events, be sure to take extra precautions as conditions are generally more dangerous. Personal protective equipment including gloves and boots should always be worn during monitoring, but are even more vital when bacterial levels are potentially much higher than usual. Safety should always be regarded as the most important concern, above additional data!

Rainy Weather and Bacterial Monitoring, continued…

What do the numbers mean?



For the past two years, AAS staff, trainers and volunteers have participated as monitoring group leaders in the Proctor Creek River Rendezvous hosted by Chattahoochee Riverkeeper and the West Atlanta Watershed Alliance. In 2014, the Atlanta area had around 2.5 inches of rain in the week prior to the event. The results showed 3 out of 42 sites had *E. coli* levels above the 1000 cfu/100mL threshold for follow-up action. In 2015, steady rainfall in the four days leading up to the monitoring more than doubled the previous year's rainfall amount. The results painted a clear picture of the difference rain can make on the bacterial levels in our waterways. In 2015, 32 of the 37 sites sampled for *E. coli* were above the AAS threshold for action, with the results at 23 of those sites greater than 3,000 cfu/100mL.

The 3M Petrifilm™ plates provide accurate results within 3M's preferred counting range of up to 150 total colonies growing per plate. This maximum 150 colony count includes both general coliform and *E. coli* colonies growing on a plate. The ratio of general coliform and *E. coli* bacteria in a waterway can vary widely due to differences in the environment and presence of bacteria sources. From Georgia Adopt-A-Stream's experience using the 3M method for natural water quality testing alongside other methods, the accuracy of the results diminishes when the final *E. coli* count exceeds around 3,000 cfu/100mL. Above this threshold, bacteria growth is limited by the available nutrients on the plate and this competition could hinder additional *E. coli* colonies from growing. The 3M Petrifilm™ method provides more than enough accuracy to fulfill the objective of quickly assessing health risks due to bacterial contamination since an *E. coli* level equal to or greater than 1,000 cfu/100mL should warrant follow-up action.

Is the water safe?

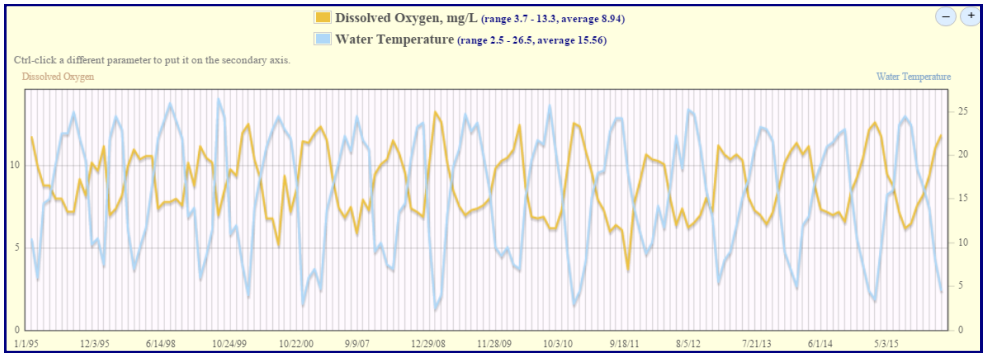
When we are asked if the water is safe, what citizens usually mean is will they get sick if they play or paddle in the creek. The only real way to get this information is to conduct bacterial monitoring. Bacterial monitoring is a great complement to both chemical and macroinvertebrate monitoring. A lot can be learned about a waterway by conducting monthly bacterial monitoring during base flow conditions, including baseline levels and changes over time. Although not recommended by AAS, safe wet weather monitoring can provide further information about the surrounding watershed and potential pollution sources. The possibility of high bacterial levels increases after rain events; so for health and safety reasons, stay out of the water after storms!

Additional information can be found in the Bacterial Monitoring Manual on the Materials & Resources page and upcoming workshops can be found on the homepage calendar of www.GeorgiaAdoptAStream.org.

Board Member Spotlight: Melissa Rottenberg, Senior Ecologist, Arcadis

Melissa Rottenberg is a lover of all things in nature and gets especially excited when she is among aquatic life. Her appreciation of the natural world was inherited from her mother, along with a deep connection to music, which she feels are intertwined. She has been exploring the woods, creeks, and chattering with owls since she was young and glows at the sight of her daughter enjoying these same things. As an aquatic/terrestrial biologist, she has experience conducting natural and water resource studies in the Southern US. Work-life has led her to mines filled with bats; forests filled with songbirds, turtles, and insects; rivers filled with fish and macroinvertebrates; shorelines filled with birds; and inland wetlands with all their glory. All the while, home life has been spent hiking in the woods and dancing to musical beats that move her soul. Melissa began working with Georgia Adopt-A-Stream in 2000 after taking her first set of classes in order to teach workshops for the Upper Etowah River Alliance. It was through these workshops when she realized teaching was part of her genetic makeup and has continued to be a part of mentoring in one way or another ever since. Although, work life is filled less with jaunts to mines, rivers, forests, or shorelines and less miles are put on her hiking boots these days, she continues to be involved with community outreach by serving on the Adopt-A-Stream Advisory Board and Upper Etowah River Alliance Board. They even let her get into schools every now and then to inspire appreciation of the natural world in today's youth. She can still be found dancing to a soulful beat and often with a hula-hoop spinning round.

The Adopt-A-Stream Database Can Help You Tell Your Story!



Did you know that you can see graphs and summaries of water quality data at any AAS monitoring location? Click on a site from the homepage map on the AAS website and then the site's name to show the specifics of the monitoring site and an overview of the monitoring information. Click any graph on the right hand side of the page to see a table with all water quality monitoring results. An interactive graph displays trends over time and includes check boxes beneath the graph that can also add the average, minimum and maximum results for a parameter as well as the state standards. In addition, the graph can display two water quality parameters at once. To do this, with one parameter graphed, press the control button and click on another parameter. These features allow for quick analysis and easy sharing of your monitoring data!

Upcoming Dates

March 4-5: Environmental Education Alliance Conference, Environmental and Heritage Center, Buford www.eealliance.org/annual-conference

March 11-12: AAS Confluence Conference, Environmental and Heritage Center, Buford

May 2-6: National Water Quality Monitoring Conference, Tampa FL acwi.gov/monitoring/conference/2016/

June 18-24: Georgia River Network Paddle Georgia
Oostanaula, Conasauga and Coosa Rivers

Please visit our calendar at www.GeorgiaAdoptAStream.org for upcoming monitoring workshops and AAS events!

Healthy Watershed Grant Opportunity

Healthy Watershed Consortium Grants Program. The US Endowment for Forestry and Communities released its first Request for Proposals for the Healthy Watershed consortium Grants Program. This is the new delivery mechanism for grant funding under EPA's Healthy Watershed Program. There are three different categories of proposals with differing dollar amounts.

Deadline: March 14th

For more information or to apply: usendowment.org/partnerships/hwcgrantprogram.html

Thank You Active 2015 Trainers!

*Trainers who led at least one QA/QC workshop in 2015

Coral Bass
Seirisse Baker
Brandi Cagle
Eric Cagle
Blake Caldwell
Frank Carl
Vicki Culbreth
Jesse Demonbreun-Chapman
Ruth Eilers
Jennifer Flowers
Lori Forrester
Mary Freund
Sumner Gann
Renee Gracon
Harold Harbert
Chelsea Hopkins
Sheila Humphrey
Daniel Huser
Mike Kahle
Amanda Kanack
Chris Kodani
Shelly Krueger
Jan MacKinnon
Roger Martin
Jennifer McCoy
Brian McKnight
Ruth Mead
Michael Meyer
Kate Mowbray
Ashby Nix
Michael O'Shield
Michael Reardon
Cassie Renfrow
Lance Renfrow
Alexa Robinson
Tyler Sims
Joshua Smith
Kevin Smith
Sharon Smith
Obby Tapley
Amos Tuck
Andrew Walter
Jessica Warren
Tom Weiland
Dave Wenner
Brian Wiley

Welcome New Adopt-A-Stream Trainers in 2015

*New trainers who led at least one QA/QC workshop in 2015

Sandy Aceto
Ariel Blanton
Beth Button
Michael DeLisle
Margi Flood
Bruno Giri
Sarah Hazzard
Robert Hodgdon
Erika Hollis
Tiffany Hunter
Carrie Koenigstein
Tamela Mills
Rocky Nation
Jeremy Pike
Cathy Reas Foster
Julie Shutters
Vicki Soutar
Jessica Sterling
Jack Turner
Yvette Wise

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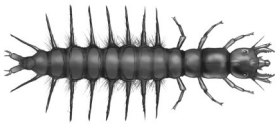
AAS Staff: *Harold Harbert, Seira Baker and Chelsea Hopkins*

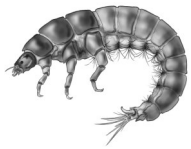
GO BLUE!
Sign up for our e-newsletter by emailing us at AAS@dnr.ga.gov


Dragonfly


Riffle Beetle


Dobsonfly


Stonefly


Net Spinning Caddisfly

CONFLUENCE 2016: MARCH 11-12

ADOPT-A-STREAM ANNUAL CONFERENCE

Friday evening: *Student Water Science Poster Competition and Social*
Saturday: *Water Quality Workshops, Exhibits and Awards Ceremony*

REGISTER NOW!

Registration deadline is Tuesday, March 8th
Deadline for t-shirt orders is Friday, March 4th at noon

$30 registration ~ $20 for students with ID
~ Environmental & Heritage Center in Buford, GA ~

There will be no on-site registrations. For more information, visit the Confluence page.

"From Your Backyard to the National Community: Citizens Making a Difference"

Keynote Speaker: Barb Horn, Water Resource Specialist at Colorado Parks and Wildlife

Ms. Horn has worked on water quality issues in Colorado rivers since 1986 as a Water Resource Specialist for the Colorado Parks and Wildlife. She founded the Rivers of Colorado Water Watch Network as a mechanism to obtain water quality data for the Clean Water Act process in Colorado. This is a volunteer monitoring program which annually monitors over 860 stations on 600 plus rivers in Colorado for chemical, physical and biological parameters. She was the Volunteer Monitoring representative on the National Water Quality Monitoring Council for two terms. She is currently on the Board of River Network, a national organization that empowers local entities to protect and preserve their rivers, which aligns with her belief that individuals hold the power to make our world a great place. A Colorado native, she claims she reached her maximum potential at five years old and has been trying to get it back since.