

GEORGIA

Adopt-A-Stream

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Adopt-A-Stream Staff, Editors



Fall Float on the Flint 2016: Monitoring with Multiprobe Meters

The Adopt-A-Stream staff has been fortunate to be invited on the annual Paddle Georgia trips. Not only has this given the program an excellent opportunity to collect important water quality data and educate the public, it has also allowed us to conduct important tests regarding the suitability of new monitoring equipment for volunteers. The 2016 Fall Float on the Flint was no exception.



Probes deployed from canoe

In the fall of 2014, the Georgia Adopt-A-Stream program purchased several Orion Star A329 meters to test and loan to targeted monitoring groups. These meters have multiple probes that quickly measure pH, conductivity, salinity, dissolved oxygen, and temperature, allowing volunteers to collect more samples in less time and with less equipment. For the last two years, Adopt-A-Stream staff and volunteers have conducted side-by-side comparisons of the Orion meters and the traditional Adopt-A-Stream testing kits during targeted monitoring events such as the Fall Float on the Flint, building a data set that provides reliable information about the accuracy of the meters. For the Fall Float, we decided to forgo using the traditional AAS kits in order to save time. Overall, the AAS monitoring team took 20 samples on the Flint River, which was slightly fewer than in previous years because the trip only lasted three days instead of four. Additionally, four of the planned monitoring sites were dry, likely due to the fall's severe drought.



Fall Float monitoring team conducting meter calibration

Adopt-A-Stream has loaned some of the Orion meters to targeted volunteer groups who regularly monitor multiple sites to help speed up their data collection process, allowing them to cover more sites than they would otherwise be able to reach. Hiwassee River Watershed Coalition, Inc. (HRWC) is one of the groups putting the Orion meter to use in their sampling. HRWC is collecting chemical and bacterial data monthly at six locations on the Hiwassee River, two in Towns County, three in Clay County, and one in Cherokee County.

Fall Float on the Flint 2016 Continued...

“We could not even remotely have accomplished all the intensive sampling in the Butternut Creek watershed of Union County, GA which figures prominently at two county parks and the public golf course, without the loan of the meter. Of course, we could've just collected the E. coli samples, but without the water chemistry data, it would be impossible to truly interpret the results,” according to HRWC Executive Director Callie Moore. Orion meters are also being used by High Falls Lake Association and the River Valley Regional Commission. AAS volunteers are welcome to use monitoring methods beyond those that are taught in the workshops, as long as they have a quality assurance plan that documents their methods to ensure accurate data is submitted to the AAS database.

Are multiprobe meters the right tool for you? Most likely, no. These meters are expensive to purchase and to maintain. In addition, they require time-consuming calibration. For monitors sampling individual sites, the standard AAS methods using the LaMotte chemical kit, dedicated conductivity meter, refractometer or Secchi disk are still recommended; these methods are less time consuming for single site sampling and will produce comparable data. But if you're sampling multiple sites in a day, it is hard to beat a multiprobe meter. If you have questions or want to explore alternative methods or add parameters to your sampling plan, feel free to contact the AAS State Office. We'll do our best to help you create the right monitoring plan to meet your goals.

On Paddle Georgia's trip maps, organizer Joe Cook provides interesting bits of information about various points of interest along the route. Below is an excerpt from one of the highlights of this fall's trip.

2016 Fall Float on the Flint, October 8, Limestone Limbo: Double Springs, Blind Cave Salamanders & Albino Crayfish

Located on the west bank of the river flowing out of a crevice in the limestone bluff, the spring has been explored by cave diver Paul DeLoach who described a 2011 dive in the spring: “As you proceed into the cave some 250 ft there is a karst window overhead from which you can see surface light. There is a small depression at the surface and a small surface pool. After passing under this feature the cave floor begins to drop from 40 feet to 70 feet, and then again to almost 90 feet. The cave then takes an easterly turn and goes beneath the Flint River,



The Shaft, a popular spring

continues into Mitchell County and changes from a stream channel to one with high vaulted ceilings and fissures.” On this same dive, his partner Guy Bryant described a catfish more than three feet in length. In addition to harboring common fish, this underwater world is home to two unique creatures—the Georgia Blind Cave Salamander and the Dougherty Plain Cave Crayfish. The salamanders have no eyes and little pigment, rendering them pinkish white and somewhat iridescent. They sport long, red external gills behind a broad head and grow to lengths of up to three inches. Beyond that, we know nothing of the creature's eating, reproductive or survival habits—after all, only a handful of individuals have ever seen them in their natural habitat. The crayfishes are equally mysterious. They have a set of pigmentless eyes, and antennae twice as long as their slender, white, two-inch-long body. Both might have remained undiscovered had we not started tapping the Floridian aquifer. The salamander was first found in 1939 when an engineer with Dougherty County's water system lifted one out of a 200-foot well. The crayfish was discovered two years later—also in a well.”



Photo by Chris Skelton

Cave Crayfish

Fall Float on the Flint 2016 Continued...

Local Students Get to Experience the Flint River in Southwest Georgia

By Jessica Rutledge, Administrative Manager, Flint Riverkeeper



Photo by Joe Cook

Students receive training by the riverbank

Over the Columbus Day weekend, while most high school students were sleeping in and relishing the fact that they didn't have to go to school, a group of students from the Baker County School and their brave teacher, Mohammad Mujeebuddin, were getting up early Monday morning to paddle 17 miles on the Flint River.

Five students from the Newton school were selected by the administration and teachers based on their academic performance and interest in the Flint River. These students and their teacher did not have much, if any, experience paddling prior to the 3-day trip, which included an additional 39 miles on Saturday and Sunday leading to Monday's finale. Thanks to a grant from Weyerhaeuser, not only did this group of students get to encounter the Flint River first hand, but they also received certification in Adopt-A-Stream monitoring.

Gordon Rogers (Flint Riverkeeper) instructed the students and their teacher in basic paddling on a shorter 7-mile jaunt the Monday before the 3-day Fall Float on the Flint. Joe Cook of Paddle Georgia and the Coosa River Basin Initiative shepherded the group during the Fall Float. Joe and Gordon feel it is important for young people to get out and experience nature, and in particular rivers, to foster a greater appreciation for our natural resources, leading to greater support and protection of these valuable cultural, economic, and ecologic assets. The students commented that they "really enjoyed the springs, the camping, and learning about the Adopt-A-Stream methods, but that paddling was a lot of work." We look forward to these students signing up for another paddling event, and taking an interest in outdoor activities as they mature into young adults.

We are currently working with the group to get an Adopt-A-Stream monitoring site established close to where they live. Thank you to Weyerhaeuser, Joe Cook, and Paddle Georgia's Fall Float on the Flint for allowing this to happen!



Fall Float paddlers exploring a blue hole

Georgia AAS Data is available for all to view or download

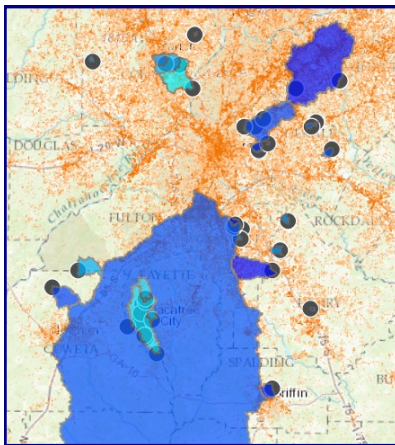
If you've been itching to get your hands on water quality data to analyze trends, look for anomalies, or make your own assessment of watershed health—you're in luck! All AAS data can be downloaded from our online database. In addition, you can find years of water quality data conducting side by side testing of monitoring equipment, such as comparing sensor data with AAS field methods, and analyzing *E. coli* samples taken side by side using IDEXX and 3M Petrifilm methods. Feel free to download data from our website or contact the AAS State Office if you need assistance. Please do share your results, we'd like to know what you find!

The Big Picture: Putting a Watershed Puzzle Together with a Little Help from my Friends

When I first volunteered for Georgia Adopt-A-Stream, I immediately loved it, because I felt like I was being swept up in some kind of volunteer science activist movement. Being a newly-minted college faculty straight out of graduate school, I didn't think scientists were supposed to be part of any movement, let alone be activists, so my involvement felt sort of like joining a resistance group. Rebellion aside, it also felt great to be part of a larger cohort, whose members all "spoke the same language" and understood that bugs living in water could actually be a good thing. I felt that my time and data were going to a worthy cause, and I really hoped that some person would one day put all of this information to good use. To my surprise, that person using these data turned out to be...me!!! In 2011, I published a paper along with my former student Anne Stahley, which summarized two semesters' worth of hard work using Adopt-A-Stream protocols at 9 study sites that hinted at a connection between a stream's macroinvertebrate community and the adjacent land use. Among other things, we discovered that parking lots have really nasty streams—perhaps this was worth further study! Over the next 5 years, I got to work with a total of 12 wonderful students to monitor 20



Chris, the fly fisherman



Example of data layers using ArcGIS online

sites. I also had to find a way to measure imperviousness around a stream, and geographical information systems (GIS) provided the answer, so I set out to learn how to use ArcGIS to analyze satellite imagery. All of these studies recently culminated in a new paper, currently undergoing peer review by the editorial board of a scientific journal, investigating how impervious surface area affects the health of the macroinvertebrate community. Like so many scientific studies, it opened up some questions that can only be answered with a much larger dataset, so for my current research project, I am now working with a portion of Georgia Adopt-A-Stream's region-wide database. This project is kind of like a puzzle—each database entry is a small piece of a picture, and by putting together all of the pieces a larger picture emerges. The coolest part: all of these data were collected by a diverse group of volunteers—literally all of us who contribute to the data for a greater good. Volunteers may collect data because of

their academic curiosity, civic pride, a professional interest, or just wanting to know more about their local stream. The watersheds that these volunteers work in are equally diverse, and range from tiny to large, and from pristine forest to suburbs, to downtown in our biggest cities. I'm working hard to have that puzzle finished by the time Confluence rolls around at the end of March, so if you want to see what your data are being used for, come to our conference! Lastly, I want you to know that I'm honored to work with such a nice, large dataset, and I appreciate you sharing your data, so I want to share something back: if you want to learn how to delineate your watershed with a free, easy-to-use web-based application, come to my workshop at Confluence.

Dr. Chris Kodani is an Associate Professor of Biology at Clayton State University and is an active AAS coordinator and member of the Confluence Conference planning committee.

The Amphibian Foundation, Inc.

Dear Adopt-A-Stream Community,

We are excited to tell you about our new non-profit organization in Atlanta called The Amphibian Foundation, Inc. Our ability to build this, and to get it up and running so quickly is a direct result of our amazing and passionate partnerships and sponsorships.

Our Mission: The Amphibian Foundation is dedicated to connecting individuals, communities and organizations in order to create and implement lasting solutions to the global amphibian extinction crisis. Through conserving amphibians and their ecosystems, we are protecting one of the most sensitive and diverse groups of animals for the benefit of wildlife biodiversity, humanity and the environment.

Through conducting scientific investigations, partnering with other agencies, educating others, training citizen scientists, and disseminating information through publications, compelling graphics & web platforms — we are growing a team of committed people building relationships to inspire the conservation of amphibians.

Though we continue to develop many research and educational programs to achieve our mission, our top priority is the conservation of imperiled amphibian species from the US southeastern coastal plain, such as the Frosted Flatwoods Salamander (*Ambystoma cingulatum*) and the Carolina Gopher Frog (*Lithobates capito*). We maintain captive colonies of both of these species, and are currently the only facility with captive *A. cingulatum* in the US. We are working closely with USFWS, GA DNR and many other state, federal and academic agencies to achieve our collective conservation goals, and this includes strengthening our relationship with the wonderful people at Adopt-A-Stream! For the past few years, we have had the privilege of participating in the annual Confluence and providing amphibian identification workshops, and we look forward to seeing you again in 2017!



Mark Mandica with a scarlet king snake found during salamander sampling at Fort Stewart

The foundation is equipped with two state-of-the-art research labs, plus the ‘metamorphosis meadow’ which is a private, outdoor area that will hold dozens of mesocosms where native US species will be bred. Once offspring are produced at the foundation, they will be experimentally released back into protected habitat at the discretion of state and federal authorities. The mesocosms will also serve as a resource for assisted-metamorphosis projects, ‘head-starting’ endangered species past the sensitive larval stage, where amphibians are particularly vulnerable to predation.

Located in Atlanta at the Blue Heron Nature Preserve, the foundation also engages the community to become involved in amphibian conservation, trains volunteers and interns, and holds regular workshops for identifying Atlanta’s urban amphibian species. Additionally, we have organized a ‘citizen science’

Metro Atlanta Amphibian Monitoring Program (www.maamp.us) which invites anyone interested to the training workshops and gets them ready to get outside to monitor frogs and salamanders in their own neighborhoods. We already have more than 30 sites which are monitored monthly. If you are interested in learning about amphibians for your own stream monitoring projects, you are encouraged to attend! Our MAAMP website includes valuable information, images and frog calls to help train people to identify species.

The Amphibian Foundation has a strong educational component to their mission as well. Aside from an active internship program with Georgia Tech students, we offer a summer camp called Critter Camp (critter-camp.org) which teaches science and conservation of reptiles and amphibians to elementary through middle school students. We have partnered with Atlanta Audubon (which is also head-quartered at Blue Heron), Blue Heron Nature Preserve and other Atlanta-based non-profits to provide an Atlanta Urban Ecologists program for grades 7-12. We wanted to make you aware of this important development and invite you to come by and see us!

For more information, please see our website: www.amphibianfoundation.org. We also are on Facebook and Instagram /frogsneedourhelp and on Twitter /amphibianfound

Mark Mandica, Executive Director and Founder, The Amphibian Foundation, Inc| mark@amphibianfoundation.org



The critically endangered Lemur Leaf Frog, *Agalychnis lemur*

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GO BLUE!

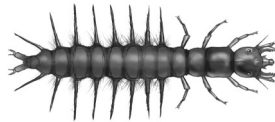
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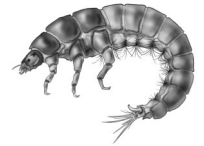
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Welcome New Adopt-A-Stream State Coordinator, Meredith Whitten!



After an 11 month apprenticeship as Program Assistant for AAS, Project WET and Rivers Alive, we're excited to welcome Meredith Whitten as Adopt-A-Stream State Coordinator, joining Seira Baker to help lead the program. Meredith is already well immersed in our numerous training programs, helping with QA/QC and Trainer workshops. She has also provided considerable assistance with the new database migration and creating some of our new websites. A graduate of Emory University, Meredith has always been drawn quite literally to water, pursuing studies in the Caribbean islands and previously working as a scuba instructor. Meredith says, "I love being a part of the Adopt-A-Stream community, and I am excited to begin my new role as a State Coordinator."

Welcome, Meredith!

**Registration is Open for Confluence 2017: March 24–25
Adopt-A-Stream Annual Conference**

Keynote Speaker: Dr. Alan Covich, Odum School of Ecology, UGA

**Join us for a Friday social, conference water quality workshops, exhibits and awards ceremony,
plus great food and fun people. Don't miss it!**

*Learn more about our conference and upcoming workshops and events on our calendar at
www.GeorgiaAdoptAStream.org*