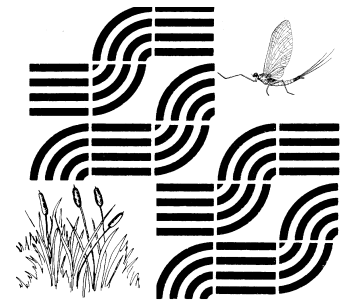


GEORGIA Adopt-A-Stream

Volume 24, Number 4 October – December 2017
Adopt-A-Stream Staff, Editors



Department of Natural Resources
Environmental Protection Division

Citizen Science in the Southeast: Water Quality Monitoring Programs

Georgia Adopt-A-Stream continues to engage with volunteer water quality monitoring programs in neighboring states towards common goals of exchanging ideas, developing partnerships to support volunteer monitors in shared watersheds, and grow participation in citizen science throughout the Southeast.

Florida Keys Water Watch

Shelly Krueger, Florida Sea Grant Agent, UF/IFAS Extension in Monroe County



When most people think of the Florida Keys, they think of the crystal clear waters of the dive and fishing capital of the world, surrounded by the Gulf of Mexico on one side and the Atlantic Ocean on the other, and encompassed by the Florida Keys National Marine Sanctuary, with almost 3,000 square miles of protected coral reefs, seagrass meadows and mangroves. The waters surrounding the Florida Keys are designated Outstanding Florida Waters and are the primary economic driver for Monroe County. Yes, the Florida Keys are a unique and beautiful ecosystem, but they are not without their human impacts!

Beginning in the 1950s, the story was bulldoze the mangroves, dredge and fill! In the Florida Keys, fill materials dredged from inshore waters were used to create US1 and 170 miles of residential canals with 312 miles of waterfront property. Unfortunately, many of these canals were dug too deep or too long, with not enough flow to keep the water moving and many do not meet state of Florida surface water standards. Another issue is the seagrass and sargassum that floats into these canals – it comes in, and it doesn't leave. In the past, these materials built soil when they washed ashore, but now they encounter the seawalls and they sink and stink! Some of these canals have more than 6' of accumulated organic matter. Furthermore, until very recently all of the Keys were on septic tanks and cesspits – the city of Key West only began advanced wastewater treatment (AWT) in 2001. Currently we have about 67% AWT coverage Keys-wide, with the majority going online in the past 5 years.

In response, the University of Florida Institute of Food and Agricultural Sciences Extension (UF/IFAS Extension) created Florida Keys Water Watch (FKWW) in October 2014, with funding from the EPA South Florida Initiative. FKWW is modeled upon the Georgia Adopt-A-Stream (AAS) program, which celebrated its 24th anniversary in 2017. The true value of volunteer-based water quality monitoring programs is the long-term monitoring by citizens, community groups, teachers and students to collect baseline water quality data over time, which is why FKWW uses AAS as its model.

FKWW is designed to raise awareness of the importance of water quality, which has been adversely affected by development in the Florida Keys. Given the compromised state of the water quality in the canals, it is important to provide public education and outreach to reduce nonpoint source pollution. We teach people to “treat your canal like your pool” – if you would not put it in your pool, do not put it in your canal! This includes items like grass clippings, fish carcasses and motor oil. We also teach residents how to test their canals for dissolved oxygen, salinity, temperature, and turbidity. Like AAS, FKWW emphasizes the connections between statewide land uses and the impacts on water quality in the sunny Florida Keys! We currently have groups monitoring 44 sites from Key West to Key Largo, and volunteers have submitted more than 250 data entries in 2017. If you'd like more information, please visit the UF/IFAS Monroe County Extension page, http://monroe.ifas.ufl.edu/environment/florida_keys_water_watch.shtml.



Citizen Science in the Southeast...Cont'd

South Carolina Launches SC Adopt-a-Stream



The South Carolina Department of Health and Environmental Control (SCDHEC) and Clemson University's Center for Watershed Excellence (CU CWE) have partnered to form the South Carolina Adopt-a-Stream (SC AAS) program. Numerous volunteers in South Carolina have been successfully utilizing Georgia's Adopt-A-Stream (AAS) program to monitor and record water quality data, and the program has gained in popularity in recent years. With inspiration from Georgia's program, along with their support and guidance, the SC AAS program was launched in June of 2017.

The goals of the South Carolina Adopt-a-Stream program include increased citizen knowledge about water quality in their watershed, problems our streams face, and watershed stewardship practices. By actively gathering water quality data, volunteers become dedicated to the protection and improved management of our waters.

SC AAS offers training and certification in physical/chemical data collection, bacteria monitoring, and macroinvertebrate surveys. Volunteers are also taught to conduct a Stream Habitat Assessment yearly. Volunteers are encouraged to use SCDHEC's Watershed Atlas (<https://gis.dhec.sc.gov/watersheds/>) to learn about their watershed and help locate a site to sample. South Carolina's trainers were originally certified through the GA AAS program, but will be recertified with SC AAS in December.

The June launch included the release of a secure and mobile-friendly SC AAS Database. Data entry is restricted to certified volunteer monitors only, but it does allow public viewing of monitoring data by site. SC AAS's Volunteer Freshwater Monitoring Handbook is ready for its first printing, and there have been several volunteer training events in the upstate and Columbia. Several videos have been produced for the Macroinvertebrate training to help guide new volunteers (and refresh veteran volunteers) of the sampling and identification methods. Webinars have been held on how to use the database and all videos and presentations are available on the SC AAS website.



Presently, SC AAS has 43 volunteer groups monitoring more than 50 locations around the state, and interest in the program continues to grow. To learn more about the program we encourage you to visit our website at www.scadoptastream.org.

Alabama Water Watch

Alabama Water Watch Program (AWW) is a citizen volunteer, water quality monitoring program covering all of the major river basins of Alabama. The mission of AWW is to improve both water quality and water policy through citizen monitoring and action. Since 1992, AWW has been educating citizens of all backgrounds about the water environment, water pollution, and watershed stewardship and teaching them to conduct water chemistry analysis, bacteriological monitoring, and stream biomonitoring. As a result, AWW has certified over 7,500 citizens as citizen scientists. These AWW volunteers have submitted nearly 90,000 water data records from over 2,300 different sites to the AWW database.



AWW uses EPA-approved quality assurance plans for water chemistry and bacteriological monitoring. Citizens have utilized their data to bring about positive changes in their communities by influencing water policy, implementing watershed management plans, and educating others, young and old alike. AWW has a youth-focused partnership program, 4-H Alabama Water Watch that prepares educators to teach students about water monitoring and stewardship. AWW is part of the Auburn University Water Resources Center and receives support from the Alabama Agricultural Experiment Station, Alabama Cooperative Extension System, and external funders. AWW is also part of the international water monitoring network, Global Water Watch.

Citizen Science in the Southeast...Cont'd

North Carolina Aquatic Data Hub

The North Carolina Aquatic Data Hub (NCADH) is a new initiative which aims to connect citizen aquatic monitoring programs across the state. The NCADH is building a statewide framework for the various groups performing monitoring as well as the users of citizen data. The program provides tools for groups to improve their monitoring while simultaneously creating uniform and consistent data that is more useful to data users. Ultimately, the program will improve understanding of North Carolina's waters in order to maintain and improve them.

The NCADH has been made possible by an initial two years of funding awarded by the Z. Smith Reynolds Foundation to New River Conservancy on behalf of multiple nonprofits and agencies across the state. To get the program up and running, the NCADH team is working on three primary deliverables: first, the development of a standardized and tiered monitoring protocols and a methods manual that groups can adopt. Second, a series of training workshops geared towards monitoring program coordinators. Third, a set of data visualization and database tools to simplify data entry, storage, transfer, and analysis. Currently, NCADH is just under a year in to the initial two years of funding, and is gearing up for training workshops in the spring! For more information about NCADH, visit neaquaticdatahub.org.

Richmond Hill Middle School Field Studies Program

Robert Hodgdon, Richmond Hill Middle School



In January, 2014, Richmond Hill Middle School teachers Catherine Warren and Robert Hodgdon, three RHMS students, and three parents participated in the Georgia DNR Adopt-A-Stream training at the UGA MAREX campus on Skidaway Island. The goal was to provide opportunities for students to become involved in more "real" science. Since that time, the seeds planted that day have grown into the most comprehensive school-based ecological studies program in the state. Students, staff, and parent volunteers are involved in over a dozen real-world ecological surveys, monitoring activities, and research on their own as a program and with partners from the Georgia DNR, USFW Services,

Ft. Stewart Fish & Wildlife Department, University of Georgia, the National Oceanic and Atmospheric Administration, and other local conservation organizations.

The work being done by this group is so in-depth and unique that the program has been recognized with awards from the U.S. EPA, White House Council on Environmental Quality, SeaWorld Conservation and Education, Georgia Science Teacher Association, National Science Teacher Association, National Association of Biology Teachers, National Association of Geoscience Teachers, Georgia Adopt-A-Stream, and the Environmental Education Alliance of Georgia. The program is funded almost entirely through fundraising except for the used travel trailer purchased by Bryan County School District which was renovated into a mobile ecology lab. Through grants, corporate sponsors, and other fundraising activities, the program has accumulated \$43,000 worth of ecological studies equipment and technology. Some of the activities carried out by the eco study group include: monthly water quality testing at several sites in the community with Coastal Adopt-A-Wetland, game fish population surveys (Ft. Stewart), native wildflower habitat restoration, soil nutrient testing (primarily in the research garden) and many more.



Richmond Hill Middle School Field Studies Program...Cont'd

Participants also completed a comprehensive chemical and biological survey of a new pond at one of the new elementary schools. The data and information were used by the DNR to develop a stocking plan. Three months after the survey, members invited over 100 elementary students to join them along with the DNR to stock 700 bluegill and 400 channel catfish in the pond. A year later, program members conducted another survey that revealed the pond had maintained a strong base of small fish which enabled them to release 25 largemouth bass in the pond.

Long-time student member, 9th grader Ava Bowling, says, "I am committed to water testing (and other ecological activities) because I know I am doing something to protect the environment I live in and not just worry about what other people are going to do about it. I hope that when people see us doing our surveys, it will inspire them to get involved like I did." 7th grade student Ryan Cranford, now in his second year as a member, says, "I love the Field Studies Program because we get to learn so much about the environment around us. Not only that, but we get hands on experience of how amazing Nature is, like setting traps to survey biodiversity or catching Monarch butterflies to test for *Ophryocytis elektroscirra* (OE) disease." At 12 years old, Ryan was one of the youngest students to become a certified water quality monitor. Of water testing, Ryan says, "I love water testing because when you go out you can guess whether the water will be healthy or not. It is so exciting when you see the specific body of water you tested is healthy, but it is also alarming when you see conditions that might put aquatic and marine animals at risk."

Got Equipment Collecting Dust?

Have you taken a break from monitoring? Or just have old monitoring equipment laying around collecting dust? Please make sure to return it to the AAS State Office so we can loan it out to others that are actively monitoring! Please contact AAS@gaepd.org to return equipment. Thank you!



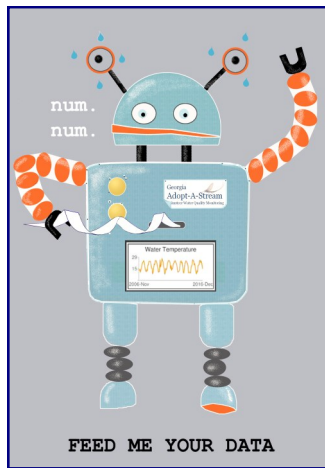
Board Member Highlight: David Bell, CH2M



David Bell was excited to join the Georgia Adopt-A-Stream (AAS) board in 2015. David began showing a strong interest in natural resources management when he was young starting with a fascination with birds, followed by rocks, and eventually everything related to ecology. David grew up primarily in Atlanta but also spent part of his youth abroad in East Africa and Madagascar. David attended the University of North Carolina at Asheville (UNCA) and graduated with a bachelor's degree in Environmental Studies in 2006. David was also a part of the cross country and track and field programs at UNCA and still holds the school record for the 3000-meter steeplechase. After college, David spent 14 months back in East Africa and Madagascar working on several development and wildlife conservation projects. In 2008, David returned to Atlanta and joined CH2M HILL as an environmental scientist focused on water resources projects, including stormwater management, stream and wetland restoration, water quality monitoring, aquatic biological monitoring, watershed assessments, and permitting.

David first heard about AAS through his client work with several metro-Atlanta municipalities that are implementing Georgia Environmental Protection Division Watershed Protection Plans. A large component of these Plans includes education and public outreach by the municipalities, which is where AAS comes into play. David attended his first AAS confluence five years ago and has been attending every year since. AAS is a great organization that serves many of the needs of municipalities in their outreach requirements as well as serving individual citizen scientists and groups. AAS connects people to their streams, lakes, and wetlands, and more than any other citizen science group in Georgia, AAS helps people better understand how their actions can either be a detriment or an improvement to those resources. When David isn't working, he enjoys running, cycling, canoeing, birding, and visiting new places with his wife - like the Rio Grande del Norte National Monument.

Remember to Enter Your 2017 Data!



The end of the year is upon us and we hope you had a wonderful one — personally, professionally and scientifically! Please input any monitoring results that have not yet been entered into the AAS database at AdoptAStream.Georgia.gov. Also, check out the graphs to see seasonal and long-term changes and trends at your site!

Thank you for all of your hard work and dedication to monitoring throughout the year. We hope 2018 brings even more opportunities for you to monitor, protect and enjoy Georgia's waterways!

In addition, we launched a new website and database in March 2017. Please continue to send any problems you experience as well as feedback to AAS@gaepd.org. We will work as quickly as possible to respond to your issues and questions. Thank you!

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**

Environmental & Heritage Center in Buford, GA

For more information, visit the Confluence page at AdoptAStream.Georgia.gov



Rivers Alive Cleanups and T-shirts!

Thanks to the efforts of our organizers and volunteers, Rivers Alive is having another successful year! So far in 2017, 290 cleanups have engaged almost 27,500 volunteers to remove over 433,000 pounds of trash from Georgia's waterways!

If you held a cleanup this fall, please submit your final tally as soon as possible so we can finalize our yearly report!

In addition to removing trash, these cleanups have helped to educate citizens across the state about water quality issues.

Please return extra shirts to the Rivers Alive state office so we can share them with other volunteers! Contact Rivers Alive at Rivers.Alive@gaepd.org or call 404-651-8513 to return shirts.



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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GO BLUE!

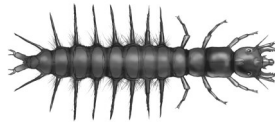
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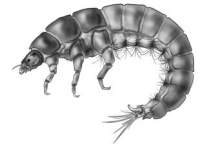
Riffle Beetle



Dobsonfly



Stonefly



Net Spinning Caddisfly

Welcome Mary Lou, AAS State Coordinator



We're happy to announce that Mary Lou Hoffacker has joined our team as our newest Adopt-A-Stream State Coordinator. Mary Lou recently graduated with Departmental Honors from Sewanee: The University of the South, with a Bachelor in Science. In college, Mary Lou studied Appalachian stream salamander communities and gained familiarity with fluvial geomorphology. In the fall of 2015, she spent a semester abroad in Queensland, Australia, researching and studying the diversity of flora and fauna in this amazing country.

She has had internships at the Tennessee Aquarium and with DNR Coastal Resources Division. She has also worked as a kayak guide with Southeast Adventure Outfitters on the Georgia coast. Mary Lou is a Georgia native, calling Saint Simons home, and she was first certified in AAS while in the 5th grade! She was destined to be State Coordinator!

"It is great to be working with such a successful and influential state program in the Southeast and to be meeting so many of the people that help to keep our state so magnificent. I am really looking forward to meeting and working with all of you soon!" - Mary Lou

During her interview, Mary Lou stated there's no more satisfying day than working on the Georgia coast and returning home covered in pluff mud. We're confident she's going to fit right in with our crew!

Harold Harbert, EPD Watershed Outreach Manager