GEORGIA
# Adopt-A-Stream

Volume 24, Number 1 January - March 2017
*Adopt-A-Stream Staff, Editors*

Department of Natural Resources
Environmental Protection Division

## Adopt-A-Stream by the Numbers 2016

**Georgia Adopt-A-Stream is deeply grateful for our remarkable volunteers, trainers, community coordinators, advisory board members and partners for their support and dedication to the waters of Georgia and helping this program continue to grow! You have helped us meet the five AAS goals for 2016 and contributed more than 24,000 hours worth over $570,000 in volunteer labor! Because of your help, Adopt-A-Stream remains a leader in volunteer water quality monitoring after 23 years.**

### New Community Programs and Trainers

In 2016, Georgia Adopt-A-Stream continued to develop partnerships with government, nonprofit groups, universities, schools and local programs while working hard to maintain and establish AAS programs, community coordinators, trainers and volunteer groups across the state and beyond. In 8 Train-The-Trainer workshops, 24 new trainers were certified, and 16 of those trainers also conducted their first workshops. Supporting our local AAS trainers and community coordinators continued to be a strong focus of the program. AAS staff held over 10 meetings across the state to ensure local coordinators receive the tools and support necessary to implement the program. This network of over 75 active trainers and coordinators, working in counties, cities and watersheds, provides critical programmatic support, resources, expert advice and workshops to engage citizens in monitoring our streams, lakes and coastal waters.

436 Workshops

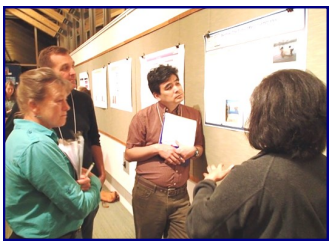
2,659 Active Volunteers

Out-of-state Adopt-A-Stream partnerships and local programs made great progress in 2016! Georgia staff met in Greenville, SC with trainers and partners, including representatives from the SC Department of Health & Environmental Control (DHEC) and Clemson University. At this meeting, DHEC announced a partnership with Clemson to launch a South Carolina Adopt-A-Stream program, using the Georgia AAS program as a model. AAS staff presented on the history and development of Georgia's program, emphasizing the keys to program continuity and growth. These key features include excellent state level staff and resources, a robust quality assurance project plan, empowered local coordinators and trainers, and an outstanding online database. There are now 9 SC trainers actively hosting workshops, garnering growing interest from new volunteers, hosting nearly 70 active monitoring sites. Additionally, the Florida Keys program continues to expand, experiencing double digit growth of active monitoring sites. With the support of a local trainer, partners in Tennessee joined Georgia AAS in 2016, registering 15 new monitoring sites in the state.

75 Active Trainers

# *Adopt-A-Stream by the Numbers 2016, Continued...*







In 2008, AAS launched its online database, allowing volunteers to submit and view data online. Since then, participation in the program has soared and continues to grow each year!

***346 New Volunteers!***

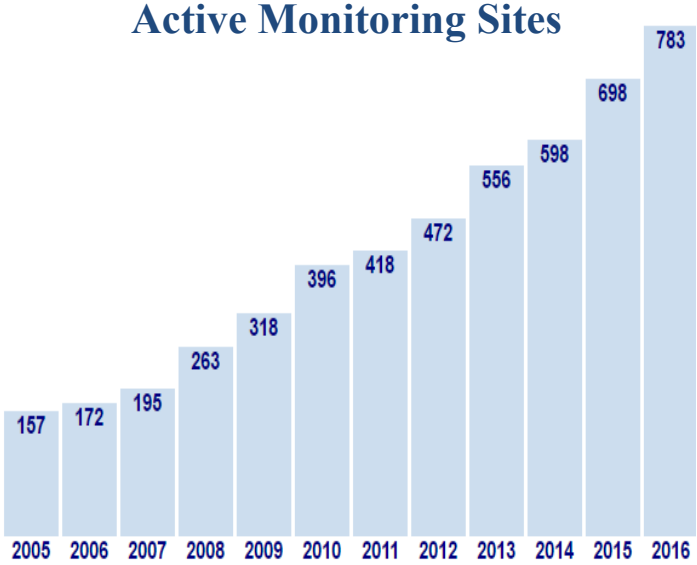
***16 New Trainers!***

***260 New Sites!***

***103 New Monitoring Groups!***

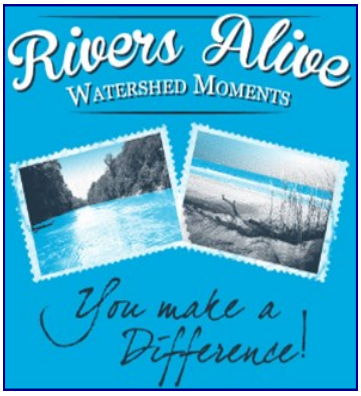
***198 New Streams!***

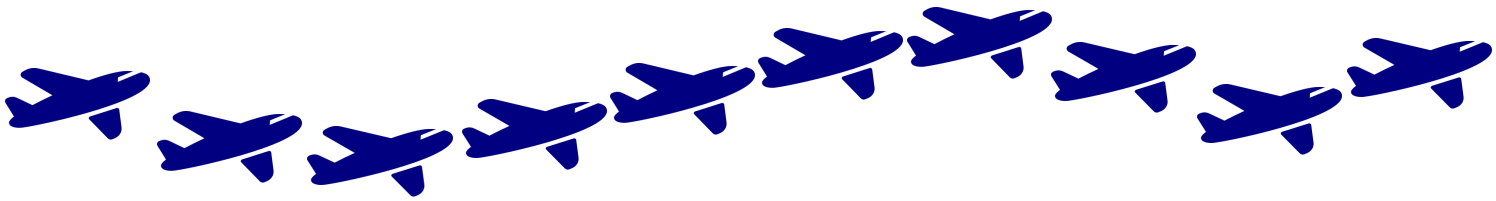
## Active Monitoring Sites




**Rivers Alive**

The education theme for the 2016 Rivers Alive program was "Watershed Moments." Rivers Alive participants were encouraged to reflect on how maintaining healthy waterways led to meaningful moments in their local watersheds. Through cleanups, volunteers expressed their appreciation for the goods and services provided by clean waterways. Across the state, over 23,000 volunteers cleaned nearly 1,600 miles of Georgia's waterways, removing over 632,000 pounds of trash. That's over 100,000 lbs more than last year! The time spent by Rivers Alive volunteers is valued at more than $2 million dollars in 2016 alone. Over the 18 years of Rivers Alive cleanups we have removed over 10.25 million pounds of trash, which is more weight than 10 Boeing 747 airplanes!

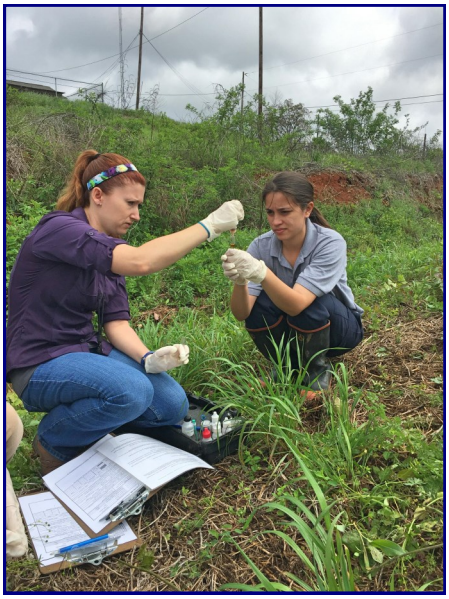


# What is Citizen Science?

**"Investing in Citizen Science Can Improve Natural Resource Management and Environmental Protection," an excerpt from *Issues in Ecology*, Issue 19, a publication of the Ecological Society of America**

Citizen science means different things to different people, causing confusion about its nature and utility. We use the term to refer to the practice of engaging the public in a scientific project—a project that produces reliable data and information usable by scientists, decision makers, or the public and that is open to the same system of peer review that applies to conventional science. The term citizen science is sometimes used differently—for example, to describe only projects where volunteers collect data, only projects that involve professional scientists, or the engagement of nonscientists in policy discussions. However, our meaning is gaining general acceptance, and we use it throughout this paper. Citizen science, as we define it, is indistinguishable from conventional science, apart from the participation of volunteers—both can use a variety of methods and can achieve a variety of goals, including basic research, management, and education. Citizen science is science (with the addition of volunteers) and should be treated as such in its design, implementation, and evaluation.



AAS citizen scientists testing the dissolved oxygen levels of a sample

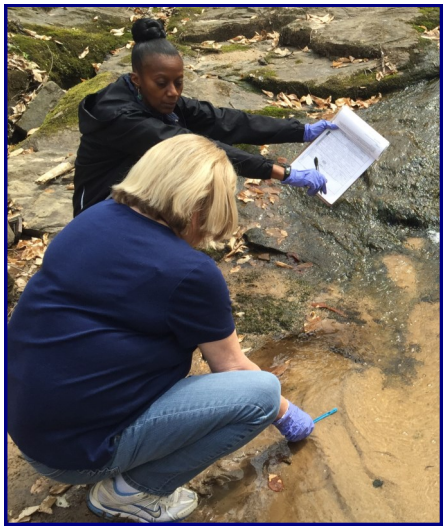
Citizen science is not new. Before science first emerged as a profession, most scientific research was conducted by the "citizen scientists" of their day—keen amateurs who conducted or carried out scientific research. Over the centuries, amateur scientists and volunteers made key contributions to the understanding of climate, evolution, geological processes, electricity, astronomy, and other phenomena. In the United States, for example, farmers, weather observers, and naturalists documented the daily weather, the timing of harvests and pest outbreaks, and the abundance and behaviors of wildlife. Early citizen scientists in North America famously included Benjamin Franklin and Thomas Jefferson. Less well known are the data collected by naturalists, such as Henry David Thoreau. Thoreau's painstaking records from the 1850s of the first flowers, leaves, and bird arrivals each spring are now being used by scientists to identify the impacts of climate change in Concord and at Walden Pond in Massachusetts. In the 1930s and 1940s, Aldo Leopold learned from his own form of citizen science, banding birds and recording the timing of spring events. Noting a range of discoveries made by contemporary citizen science volunteers, Leopold concluded that "the sport-value of amateur research is just beginning to be realized." In fact, many of Leopold's research projects are being continued today by citizen science volunteers.

Get involved with citizen science projects around the world!

More recently, researchers have benefited from the information technology revolution and the advent of the Internet and locationaware mobile technologies equipped with cameras and other sensors. Such technologies have made it easier for professionals and nonprofessionals alike to access, store, manage, analyze, and share vast amounts of data and to communicate information quickly and easily. Central to the rapid evolution of citizen science, technological advances have driven its growth. Now, for example, citizen science projects can deploy large numbers of volunteers and record huge volumes of observations in centralized databases that can be analyzed in near-real time. Increased capacity has spurred recent rapid growth in citizen science, leading to the rising use of citizen science data in peerreviewed publications. Powered by public interest, today's citizen science can help answer the most challenging ecological and environmental questions, addressing issues that affect everyday lives.

# What is Citizen Science? Continued...

Citizen science projects can pursue basic or applied science, with purposes that include baseline ecological or environmental monitoring as well as crisis response and taking management actions, such as habitat restoration. Citizen science can tackle local questions, such as identifying the source of pollution in a single stream; it can also provide insights into continental or global processes, such as climate change or the world's great animal migrations. Volunteers can participate in a little or a lot of the scientific process. For instance, they might formulate a scientific question and then contract with professional scientists to conduct the research; or they might collaborate closely with professional scientists to jointly develop a project, collect and analyze data, and report the results. Private citizens, alone or in groups, can even pursue scientific research wholly on their own, independent of professional scientists. However, volunteers usually contribute by collecting data in projects designed by professional scientists.



Volunteer monitors assessing physical stream characteristics

*McKinley, D.C. et al. 2015. Investing in Citizen Science Can Improve Natural Resource Management and Environmental Protection. Issues in Ecology Report Number 19. Ecological Society of America, Washington, DC, pp. 3-4.*

## Boots in the Water: The Role of Citizen Science in Watershed Conservation

Confluence 2017 will include a two hour session addressing the value of citizen science in contributing to research and conservation needs, focusing on water resources in the southeastern U.S. Join Dr. Alan Covich and Dr. Carol Couch for this featured talk moderated by Dr. Stephen Golladay.

Dr. Alan Covich is a professor of ecology and the former director of the Institute of Ecology in the Odum School of Ecology at the University of Georgia.

Dr. Carol Couch is currently the Executive Director at the Phinizy Center for Water Sciences and a former Director of the Georgia Environmental Protection Division (EPD).

Dr. Stephen Golladay is a professor and scientist at the Joseph W. Jones Ecological Research Center and the Odum School of Ecology at the University of Georgia.

Brief presentations will be followed by a panel discussion touching on the follow questions:

- How do we shift citizen science from an 'engagement' activity to an actual 'tool' for addressing water resource challenges? Does this require a shift in perception or practice?
- How do we make sure citizen science meets the needs of State and Federal Agencies charged with managing or regulating while preserving the volunteer ethos of citizen data collection?
- How do we incentivize, distribute the capacity, and provide resources for citizen science programs?
- What would citizen scientists like to learn about the data they collect, and how do we provide that information?
- What are the technical/logistical challenges of implementing a successful citizen science program (i.e. quality control, data storage, long term sustainability)?

If you are interested in exploring the topic of citizen science, register for Confluence 2017 by the March 21 deadline and sign up for "Boots in the Water" or some of our other great sessions!

**To learn more about citizen science, check out these resources:**

EPA, Citizen Science for Environmental Protection: www.epa.gov/citizen-science
Citizen Science Association: citizenscience.org
SciStarter: scistarter.com

# *Thank You Active 2016 Trainers!*

Trainers who led at least one QA/QC workshop in 2016

Alexa Robinson
Amanda Kanack
Amos Tuck
Andrew Walter
Ben Maher
Beth Button
Blake Caldwell
Bob Bourne
Bob Schmitt
Brian McKnight
Brian Wiley
Callie Moore
Carrie Koenigstein
Cassie Renfrow
Cathy Reas Foster
Charles Nimmo
Chelsea Hopkins
Chris Kodani
Daniel Huser
Dave Wenner
Duncan Hughes
Erika Hollis
Frances Kennedy
Frank Carl
Harold Harbert
Jack Turner
Jan Mackinnon
Jennifer Flowers
Jennifer McCoy
Jeremy Pike
Jesse Demonbreun-Chapman
Jessica Sterling
Jessica Warren
Julie Shutters
Kaleigh Sims
Kate Mowbray
Kathy Church
Kathy Ferrell
Kevin Smith
Linda Teachey
Lori Forrester
Lori Watterson
Mary Freund
Megan Sheehan
Melissa Echevarria
Meredith Whitten
Michael DeLisle
Michael O'Shield
Michele Smith
Mike Kahle
Obby Tapley
Rachael Thompson
Rick Frey
Robert Hodgdon
Rocky Nation
Ruth Eilers
Ruth Mead
Sandy Aceto
Sarah Levine
Sarah Sweat
Seirisse Baker
Sharon Smith
Shelly Krueger
Sonya Wood Mahler
Sumner Gann
Tamela Mills
Terry Porter
Tiffany Hunter
Tom Weiland
Tyler Sims
Vicki Culbreth
Vicki Soutar
William Lott
William Tietjen

# *Welcome New Adopt-A-Stream Trainers in 2016*

New trainers who led at least one QA/QC workshop in 2016

Ben Maher
Bob Schmitt
Charles Nimmo
Frances Kennedy
Kaleigh Sims
Kathy Church
Kathy Ferrell
Megan Sheehan
Melissa Echevarria
Meredith Whitten
Michele Smith
Rachael Thompson
Rick Frey
Sarah Levine
Sonya Wood Mahler
William Lott

# Confluence 2017: March 24-25

## *Adopt-A-Stream Annual Conference*

*Friday evening: Poster Session and Social*
*Saturday: Water Quality Workshops, Exhibits and Awards Ceremony*

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


Friday Social Speakers: **Dr. Tony Martin,** Professor, Emory University, Dept. of Environmental Sciences & **Ruth Schowalter,** Artist, Writer, Interplay Leader

**REGISTER NOW!**

**Registration deadline is Tuesday, March 21st**
Deadline for t-shirt orders is Friday, March 17th 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 and to register, visit www.GeorgiaAdoptAStream.org*

Volume 24, Number 1 January - March 2017

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:

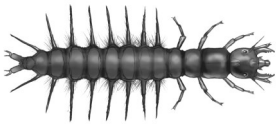
Georgia Adopt-A-Stream
Environmental Protection Division
2 MLK Jr. Dr. SE, Suite 1462 East
Atlanta, GA 30334
404.651.8512 / 404.651.8517
GeorgiaAdoptAStream.org

**AAS Staff:** *Harold Harbert, Seira Baker and Meredith Whitten*

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

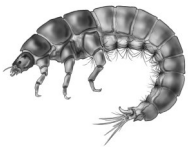
Dragonfly

Riffle Beetle



Dobsonfly

Stonefly



Net Spinning Caddisfly

# *Confluence Keynote Speaker: Dr. Alan Covich, UGA*

How does drought affect the diversity of aquatic species? Dr. Covich, professor of ecology in the Odum School of Ecology at the University of Georgia, has the answer. During his keynote address, Covich will not only discuss the role drought plays in the reduction of aquatic diversity and connectivity, he'll also examine the inverse effects that floods have on soil erosion, eutrophic increase and nutrient runoff to streams. Variations in flow aside, Dr. Covich will discuss Georgia's longstanding record of water quality monitoring, reflecting the deeply embedded concern Georgians have for our region's conservation of biodiversity and environmental quality.

Dr. Covich received his Ph.D. in Biology from Yale University and an A.B. degree from Washington University. Along with numerous international publications and awards, he chaired Colorado State University's Department of Fishery and Wildlife Biology and was on the faculty of the University of Oklahoma and Washington University-St Louis. The bulk of his research focuses on the impacts that droughts, floods and hurricanes have on freshwater ecosystems, their food webs, and the services these ecosystems provide for humanity.

From some of the earliest studies on the Savannah River to the ongoing work by agencies and citizen scientists, the documentation of changes in rivers has led to important policies and improvements in habitat quality. Covich has consistently contributed to that knowledge base by publishing freshwater ecology research, editing editions of *Ecology and Classification of North American Freshwater Invertebrates*, and co-editing reviews on climate change and drought impacts.

We hope you will join Dr. Covich by engaging in a presentation that will help us understand the increasing concern for water storage, aquatic species resilience and variable stream flows. Following his address, there will be a two hour workshop and panel discussion on the role of citizen science in watershed conservation.

*Please visit www.GeorgiaAdoptAStream.org to register for Confluence 2017!*