Mona Dominguez, Program Director
Sydney Smith, Volunteer Monitor Coordinator
Sergio RuizCordova, Data Coordinator
Carolina Ruiz, Administrative Assistant
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About AWW

Alabama Water Watch (AWW) is a citizen volunteer, water quality monitoring program covering all of the major river basins of the state. The mission of AWW is to improve water quality and water policy through citizen monitoring and action. With a "data-to-action" focus, AWW helps volunteers collect, analyze, and understand their data to make positive impacts.

Established in 1992, AWW is a national model for citizen involvement in watershed stewardship, largely because of its three interrelated components: citizen monitoring groups, a university-based program, and a non-profit association.

AWW follows EPA-approved quality assurance monitoring plans with a community-based, science-based approach to train citizens to monitor conditions and trends of their local waterbodies.

The AWW Program is part of the Auburn University Water Resources Center (AUWRC) in the Alabama Agriculture Experiment Station (AAES) and receives support from AAES and the Alabama Cooperative Extension System (ACES).
AWW Vision & Goals

The AWW vision is to have a citizen monitor on every stream, river, lake and coast in Alabama.

The goal of AWW is to foster the development of statewide water quality monitoring through:

- **Educating** citizens on water issues in Alabama and in the world.
- **Training** citizens to use standardized equipment and techniques to gather credible water information using quality assurance protocols.
- **Empowering** citizens to make a positive impact by using their water monitoring data for environmental education, waterbody restoration and protection, and involvement in watershed stewardship.
<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volunteer Monitors Certified</td>
<td>465</td>
</tr>
<tr>
<td>Certification Workshops</td>
<td>101</td>
</tr>
<tr>
<td>Data Records Submitted</td>
<td>3,192</td>
</tr>
<tr>
<td>Sites Established</td>
<td>442</td>
</tr>
<tr>
<td>Waterbodies Monitored</td>
<td>219</td>
</tr>
<tr>
<td>Active Monitoring Groups</td>
<td>70</td>
</tr>
<tr>
<td>4-H AWW Youth Participants</td>
<td>8,400</td>
</tr>
<tr>
<td>Raised Via Tiger Giving Day</td>
<td>$10,325</td>
</tr>
</tbody>
</table>
What's the Value of an Hour?

4,890 hrs = $108,949

In 2017, a total of 3,192 water quality data records were submitted by volunteer monitors to the AWW online water quality database, providing the State over $577,494 in savings for collection of water data.*

In addition, volunteer trainers and workshop participants contributed more than 4,890 hours of Volunteer Citizen Time to AWW at a value of $108,949.**

*Calculated based on cost analysis conducted during the USDA/CSREES-funded study, "A Transferable Model of Stakeholder Partnerships for Addressing Nutrient Dynamics in Southeastern Watersheds" (Deutsch et al 2007), modified with cost adjustments to 2017 values.

** Calculated based at 7 hours per workshop and $22.28/hour for volunteer trainer time for AL, from www.independentsector.org/resource/the-value-of-volunteer-time
Citizen Training & Data

Volunteer Trainer Rita Grub pictured with Water Chemistry Workshop participants
Citizen Training & Data

- 254 Water Chemistry Certifications
- 156 Bacteriological Certifications
- 111 Re-Certifications
- 57 Biomonitoring Certifications
- 56 Exploring Our Living Streams Certifications

2017 Certification Summary
Citizen Training & Data

2017 Data Submission

2,453 Water Chemistry Data Records
739 Bacteriological Data Records
3,192 Total Data Submissions!

New Groups Established
- 4-H AWW ASCEND
- 4-H AWW AUUF
- 4-H AWW Jefferson County
- 4-H AWW Marion County
- AU Biosystems Water Watch
- AU Coast Guard Auxiliary
- Bon Secour Bay Water Watch
- Huntsville Botanical Garden
- Ridges Water Watch
- Uniontown Water Watch
- West Fowl River Watch

Volunteer Trainers conducted over half of the workshops held in 2017! Thank you to the AWW Volunteer Trainers who conducted workshops in 2017.

Hana Berres
Deborah Cearley
Mimi Fearn
Rita Grub
Whitney Henson
Jean Ann Moon
Stephen Morros
Judy Palfrey
Florence Peters
Mike Shelton
Homer Singleton
Taylor Steele
Isabella Trussell
Susan (Soos) Weber

2017 Requests for AWW Citizen Data
- Alabama Department of Environmental Management
- Lee County Highway Department
- Auburn University Risk Management and Safety
- Hydro Engineering Solutions
- Thompson Engineering
- Auburn University Engineering & Fisheries Students
- Horseshoe Bend National Military Park
- AWW monitors and groups
## Citizen Training & Data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Quality Records</td>
<td>3,192</td>
<td>89,130</td>
</tr>
<tr>
<td>Water Chemistry Records</td>
<td>2,453</td>
<td>71,443</td>
</tr>
<tr>
<td>Bacteriological Records</td>
<td>739</td>
<td>17,375</td>
</tr>
<tr>
<td>Stream Bioassessment Records</td>
<td>0</td>
<td>312</td>
</tr>
<tr>
<td>Monitors Certified</td>
<td>465</td>
<td>7,802</td>
</tr>
<tr>
<td>Sites Monitored</td>
<td>442</td>
<td>2,374</td>
</tr>
<tr>
<td>Training Sessions</td>
<td>101</td>
<td>2,229</td>
</tr>
<tr>
<td>Waterbodies Monitored</td>
<td>219</td>
<td>896</td>
</tr>
<tr>
<td>Monitoring Groups</td>
<td>70</td>
<td>318</td>
</tr>
</tbody>
</table>

2017 was an excellent year for water quality data submissions. We are getting close to 90,000 cumulative water data records!

Seventy groups (304 active monitors) collected and submitted water quality data from all 10 major river basins in AL in 2017. A total of 3,192 water data records (2,453 water chemistry and 739 bacteriological) collected in 2017 were received at the AWW Office.
Citizen Training & Data

25 Years of Data from Alabama's Major Watersheds

<table>
<thead>
<tr>
<th>Watershed</th>
<th>Active Monitors</th>
<th>Active Groups</th>
<th>Active Sites</th>
<th>Total Cumulative Data Records</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1,510</td>
</tr>
<tr>
<td>Cahaba</td>
<td>5</td>
<td>10</td>
<td>8</td>
<td>2,171</td>
</tr>
<tr>
<td>Chattahoochee</td>
<td>14</td>
<td>10</td>
<td>25</td>
<td>1,565</td>
</tr>
<tr>
<td>Coastal Plain</td>
<td>18</td>
<td>4</td>
<td>79</td>
<td>17,292</td>
</tr>
<tr>
<td>Coosa</td>
<td>71</td>
<td>10</td>
<td>53</td>
<td>13,575</td>
</tr>
<tr>
<td>Mobile</td>
<td>49</td>
<td>7</td>
<td>44</td>
<td>11,202</td>
</tr>
<tr>
<td>Tallapoosa</td>
<td>51</td>
<td>14</td>
<td>93</td>
<td>15,237</td>
</tr>
<tr>
<td>Tennessee</td>
<td>47</td>
<td>13</td>
<td>57</td>
<td>14,988</td>
</tr>
<tr>
<td>Tombigbee</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>153</td>
</tr>
<tr>
<td>Warrior</td>
<td>21</td>
<td>13</td>
<td>36</td>
<td>11,429</td>
</tr>
</tbody>
</table>

Data over the years... take a look at the table above for total data submissions from each of Alabama's major river basins since 1993. That's a lot of data! Well done, monitors!

There's an App for That! The AWW Mobile App allows currently active monitors to submit monitoring data and to view watershed maps, monitoring locations, and water quality data directly from the field.

AWW monitors can also submit new site coordinates using their device's geolocation services from the field. AWW’s goal is to make data entry easier and more accessible to our volunteer monitors through the app and make data submission possible from the field.
Educators participating in an Exploring Our Living Streams Workshop

4-H Alabama Water Watch
4-H Alabama Water Watch

4-H Alabama Water Watch (4-H AWW) is the statewide youth water quality monitoring program created through a partnership between Alabama Water Watch and Alabama 4-H, the youth development program of the Alabama Cooperative Extension System (ACES).

4-H AWW increases environmental literacy by building capacity in volunteer trainers and educators to provide youth with awareness and understanding of watershed issues and tools that cultivate the critical thinking skills students need to identify and solve problems related to water quality.

Its not just the youth that get to have fun! Here are some educators having fun at Exploring Our Living Streams Workshops in 2017.

2017 4-H AWW Group of the Year, 4-H AWW Marion County.
4-H Alabama Water Watch

When asked what was the most important thing they learned through their experience with 4-H AWW, one student responded, "That we can change the world for the better, and there's no such thing as not possible."

In 2017, more than 8,500 youth were reached through 4-H AWW activities which was a 300% increase from 2016; and 66 youth were certified as 4-H AWW water quality monitors.

It was possible to increase the number of kits and workshops provided by funding through the AWW Program Partnership with the EPA Gulf of Mexico Office.

The following provides a breakdown of recent youth participation in recent years and demonstrates significant program growth.

<table>
<thead>
<tr>
<th>Program Year</th>
<th>Youth Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014-2015</td>
<td>&lt;1,000</td>
</tr>
<tr>
<td>2015-2016</td>
<td>2,800</td>
</tr>
<tr>
<td>2016-2017</td>
<td>8,400</td>
</tr>
</tbody>
</table>

4-H students participate in stream biomonitoring and water chemistry monitoring.
EPA Environmental Education Project

The 4-H AWW Program completed the two-year project, “Increasing Environmental Literacy and Watershed Stewardship through Youth-Focused Citizen Science” funded by an EPA Environmental Education (EE) Local Grant in 2017. This project was enhanced by a growing partnership with the EPA Gulf of Mexico Office who has provided monitoring kits valued at $7,000 in the past few years.

The goal of the project was to provide educators, including teachers, volunteers, and 4-H agents with the training, materials, and support needed to increase environmental literacy for youth (ages 9–18) in Alabama.

Actual outputs for youth participation exceeded the projected outputs by more than 700%!

EPA EE Project Outputs

- 8 educator workshops conducted
- 126 educators certified in 4-H AWW curriculum
- 30 ACES employees trained
- 34 AL counties involved
- 11,000 students reached through 4-H AWW activities
- 61 monitoring kits distributed to educators
- 8 student workshops facilitated
- 9 hands-on data analysis sessions conducted
- EOLS curriculum completed

Citizen Science Data Simulation (CSDS) Tool developed

Project Partners

- Troy University
- Whitewater Stakeholder Task Force
- Weeks Bay Foundation
- Weeks Bay NERR
- Southern Institute for Appropriate Technology
- McDowell Environmental Center
- Alabama 4-H Foundation
- Legacy, Inc.
- Cahaba Environmental Center
- Kaul Foundation
Global Water Watch

GWW assists in promoting, fostering, and supporting community-based, science-based watershed stewardship through the development of long-term citizen monitoring of surface waters in other countries and US states. GWW-Mexico has become the model to follow for citizen science and environmental monitoring, as scores of individuals are now conducting six types of water monitoring.

GWW is currently active in Argentina, Kenya, Bolivia, Seattle (USA), Peru, and Mexico.

13,000 Total data records submitted
1,000 volunteer citizen monitors
500 sampling sites
200 waterbodies monitored

Photos by Josh Woods
Outreach & Related Projects

Photo taken by Josh Woods in Mexico
America’s Amazon!

America’s Amazon highlights water and biodiversity-related facts about Alabama, notably that Alabama is the state with the highest aquatic biodiversity in the US. In addition, the infographic presents the concern that 19% of all fish species in the state are at risk.

The intent of the infographic is to help Alabamians appreciate water resources, to become aware of threats to water quality and aquatic species, and furthermore to take action to protect these resources.

Since its creation, the America’s Amazon infographic has been shared more than 100 times across the state.

Thanks to the following organizations for sharing the America’s Amazon infographic:

AL Bureau of Tourism
AL Department of Conservation and Natural Resources
AL Department of Transportation
AL Museum of Natural History
Choctawhatchee Riverkeeper
Dauphin Island Sea lab
DeSoto State Park Nature Center
Geological Survey of AL
Jefferson County Stormwater District
Little River Center
Office of Water Resources
Save Our Saughatchee
Soil and Water Conservation District
Weeks Bay National Estuarine Research Reserve

The project raised funds to promote AWW water monitoring statewide by providing kits, monitoring supplies, and training resources targeted at adoption of orphaned AWW monitoring sites and in support of new monitors around the state.

164 generous donors raised $10,325

Thanks to Tiger Giving Day, in 2017 AWW was able to supply 8 volunteer monitors with water chemistry monitoring supplies, and 2 monitors with one year supply of bacteriological monitoring supplies.
Ag Seed

AgSEED is a project funded by the Alabama Water Resources Research Institute, with a focus on evaluating practical methods for on-farm bacterial testing in support of the Food Safety Modernization Act (FSMA) Produce Safety Rules.

The project compares the Coliscan Easygel, 3M Petrifilm, and Coliscan MF bacteriological testing methods with the EPA's Standard Method 1603 to evaluate their accuracy and precision in determining E. coli levels in surface waters of varying chemical characteristics.

The ultimate project goal is to provide a robust, scientifically defensible foundation for the use of on-farm testing of generic E. coli by produce farmers and comply with the (FSMA) requirements.
Program Staff

Staff at Eric Reutebuch’s Retirement Reception. Pictured from left to right: Maria Reutebuch, Mona Dominguez, Dr. Puneet Srivastava, Eric, Sergio Ruiz-Cordova, Sydney Smith, Carolina Ruiz, Dr. Bill Deutsch. Not Pictured: Billy Earl
Mona Dominguez, Program Director
Mona has worked with AWW since 2009 in various roles including Watershed Management Coordinator, AWW Volunteer Coordinator and 4-H AWW Program Coordinator. In Fall 2017, she became Director of the AWW Program after the retirement of former Director Eric Reutebuch. In addition to overseeing the operations of AWW, she develops training materials, facilitates workshops, and seeks out opportunities for collaboration and growth.

Sergio Ruiz Cordova, Associate Director, GWW and AWW Data Coordinator
Sergio oversees the activities of the Global Water Watch program including the implementation of all global projects, the development and maintenance of the database for the GWW projects in other countries through the Water Resources Center. His work with AWW primarily involves data management and reporting. He also develops training materials and facilitates workshops.

Sydney Smith, Volunteer Monitor Coordinator
Sydney started working as AWW’s Volunteer Coordinator in 2017. She began volunteering as a water quality monitor with AWW in 2014 and became a Volunteer Trainer in 2015. Her work with AWW involves communicating and coordinating with volunteer monitors and trainers, preparing for workshops and helping the other program staff where needed.
Carolina Ruiz, Administrative Assistant
Carolina started working for AWW in 2017. Her primary responsibilities with AWW include data processing and management, workshop preparation, volunteer coordination, lab and monitoring kit maintenance, and assisting other program staff with daily operations.

Eric Reutebuch, Former Program Director (retired)
Eric began working with AWW in 1996. His work with AWW has involved grant writing, producing outreach and scientific publications and articles, conducting AWW workshops, GIS analyses, statistical analyses, standard methods water quality analyses in AWW’s laboratory, and conducting data interpretation sessions with local citizen monitoring groups throughout Alabama. He assumed the position of AWW Associate Director in July 2013 upon Bill Deutsch’s retirement, and became Director in 2014. Eric retired as Program Director in Fall 2017.

Bill Deutsch, Founder and Former Director (retired)
Bill was a Research Fellow in the AU Department of Fisheries and Allied Aquacultures from 1988 to his retirement in 2014. He is now a Research Fellow, Emeritus in the AU School of Fisheries, Aquaculture and Aquatic Sciences, and works part-time with AWW and GWW. Bill is also serves on the AWW Association, the Environmental Education Association of Alabama, and GWW, Inc. He retired as Program Director in 2013.
Dr. Puneet Srivastava, Director, AUWRC
Dr. Srivastava received his Ph.D. degree from the Pennsylvania State University with a major in agricultural and biological engineering and a minor in computer science and engineering. In addition to being the Center’s Director, he is the Butler-Cunningham Eminent Scholar in the College of Agriculture and a Professor in the Department of Biosystems Engineering at Auburn University. He has been recognized for his research with four awards, a Junior Faculty Research Award and three Grantsmanship Awards. In addition, he has received Distinguished Engineer Award from the Alabama Section of the American Society of Agricultural and Biological Engineers (ASABE).

Billy Earle, Grants and Contracts, AUWRC
Billy has a B.S. in Industrial Relations from the University of Alabama. He has been with Auburn University since 1992 focused on Research Administration, following an initial career in human resources. He has traveled to the Philippines, related to the establishment of the Global Water Watch program as well as Romania, Uganda and China for other sponsored projects. He has been involved with the grants administration process that supplied funding for the Alabama Water Watch and the Global Water Watch programs for the duration of his career at Auburn.
The AWW logo is an aquatic insect called a caddisfly. This particular caddisfly is named Hydropsyche, and is an important member of stream communities throughout Alabama.

The caddisfly is, therefore, a fitting symbol of the growing spirit of involvement, enthusiasm and concern for Alabama's water resources that citizens have shown through Alabama Water Watch.