GEORGIA Adopt-A-Stream

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Microplastics: A Breakdown

Take a moment to picture plastic pollution. What comes to mind? Perhaps it's a bottle washed up on a beach, blemishing the pristine shore. Or a sea turtle consuming a plastic bag thinking it's a jellyfish. These plastic products are detrimental to aquatic life, and can become even deadlier over time. Plastics do not readily break down; instead, they fracture into smaller and smaller pieces. Once they reach a size of 5mm or less, they are considered "microplastics". At this size, plastic pieces can be ingested or inhaled by aquatic organisms, often resulting in numerous negative health effects, such as decreased growth and reproduction rates, hormone disruption, and increased mortality. Luckily, there are groups across the state working to track, research, and mitigate the impacts of microplastics on our waterways.

Microplastics can enter waterways from many sources, so pinpointing areas of highest microplastic prevalence is vital to decreasing inflow of these pollutants. One approach is to track "macroplastics", or plastics easily seen by the naked eye, which provide insights on the spread and sources of microplastics. The Jambeck Research Group at the University of Georgia created the <u>Marine Debris Tracker app</u>, an open-data tool that allows citizen scientists to spatially log litter items into a global database. Over 2.5 million litter items have been logged so far, creating an invaluable resource to combat this issue.



Other groups are working to locate specific sources of microplastics. <u>Chattahoochee Riverkeeper</u> (CRK), in collaboration with Georgia Tech, collected preliminary data on microplastic prevalence in the Chattahoochee. After finding shockingly high levels of microplastics in their samples, CRK partnered with Georgia State University to create a microplastics monitoring program. Sampling points are monitored along the river in metro-Atlanta to (1) quantify microplastic levels and (2) determine if wastewater treatment plants are a source for these pollutants. CRK also leads <u>volunteer cleanup programs</u> to remove trash and macroplastics, removing 50.16 tons from the watershed in 2019.



On the coast, Dr. Jay Brandes from the <u>Skidaway Institute of Oceanography</u> (SKIO) and Dorothea Sanders with the <u>UGA Marine Extension and Georgia Sea Grant</u> have partnered to study the distribution of microplastics in Georgia waters and its aquatic organisms. They work with Satilla, Ogeechee, and Altamaha Riverkeeper volunteers, as well as UGA Marine Extension volunteers to determine the prevalence and primary entry sources of coastal microplastics. This 5-year-old program has found microplastics in waters all along the Georgia coast, as well as in most organism samples. Interestingly, plastic microfibers from clothing and other textiles were found to dominate these samples (pictured left).

So what can you do? In addition to participating in these initiatives, you can limit your contribution of microplastics into the environment. Avoid buying plastic-based clothing (e.g. polyester and nylon), and put a microfiber-catching ball in your washing machine. Additionally, reduce and reuse – avoid buying unnecessary items, particularly single-use plastics such as plastic bags or straws. Finally, conduct cleanups and lead by example, teaching others around you the importance of shrinking our environmental footprint and keeping plastic pollution out of our waterways.

Want to Learn More?

Join the **Streams of Plastic Session** on **8/26**, part of Confluence 2020, where experts from Athens-Clarke County and UGA will discuss topics such as recycling, plastics in our waterways, new methods for remanufacturing, and more!

Thank you to Dr. Jay Brandes (SKIO), Dorothea Sanders (UGA Marine Extension and Georgia Sea Grant), CJ O'Brien and Jess Sterling (CRK), and Kathryn Youngblood (UGA Jambeck Reseach Group) for contributing to this article. Photos by Dorothea Sanders.

Community Partnership Highlight: One Hundred Miles

Catherine Ridley, Vice President of Education and Communications

Georgia's coast is a wonder of the world. It deserves our pride—and our protection. That's the driving force behind our work at One Hundred Miles (OHM), a coastal advocacy organization founded in 2013 with a mission to preserve and protect Georgia's 100-mile coast through education, advocacy, and citizen engagement. Our team works from Savannah to St. Mary's to the Statehouse in Atlanta to influence decisions that impact coastal Georgia's wildlife and wild places and connect our citizens with opportunities to make their voices heard.

While most of us across the country are understandably focused on the current COVID-19 outbreak and adapting to our new normal, we also recognize the danger that could befall our environment if no one is paying attention. That's why OHM is staying focused on the many critical issues affecting our coast, including:

- **Protecting the Okefenokee Swamp:** We're helping lead the charge against a dangerous proposal to mine heavy mineral sand from Trail Ridge, a sensitive ecological area that forms the eastern border of the Okefenokee Swamp.
- Safeguarding the Health of Local Communities: In March, we joined local citizens in legal action to prevent an inadequate settlement agreement between Honeywell and the Georgia Department of Natural Resources. For more than 60 years, polychlorinated biphenyls (PCBs), mercury, and cancer-causing pollutants were dumped into the environment surrounding the area now known as Honeywell's LCP Superfund site. We're taking action to prevent the agreement from further threatening the health and wellbeing of Brunswick residents and those who fish and recreate in the Turtle River.
- Advocating for Common-Sense Solutions: During the 2020 legislative session, we collaborated with our partners in the Georgia Water Coalition to advocate for bills addressing coal ash contamination, flood mitigation, plastic pollution, and a Senate resolution in opposition to offshore drilling and seismic testing.
- Educating the Next Generation: OHM's education programs, like our Youth Environmental Leadership Program (YELP), and Families in Nature series, help local students and families better understand Georgia's local waterways and coastal resources. During the current pandemic, we've shifted our focus to include virtual education videos that are accessible from home.





No matter the season or issue, One Hundred Miles' mission to protect the coast we love depends on our supporters and friends—those who stand beside us, ready to take action. We're committed to connecting advocates with the tools they need to make a difference in their local communities, and we're proud to have built a statewide advocacy network more than 10,000 members strong. Learn more and get involved at <u>OneHundredMiles.org</u>.

Rivers Alive Special Update

The Rivers Alive Advisory Board has voted to provide full neck buffs (lightweight material that can be worn as a facecovering) to volunteers this year instead of t-shirts. These buffs may serve as a form of personal protective equipment (PPE). At this time, organizers are not able to request the number of buffs for their event on the website; however, they are encouraged to <u>register their event</u> soon, as this increases their chances of receiving buffs and helps us plan for fall cleanups. In case we are unable to completely fill requests, we will provide organizers with options for purchasing additional buffs.

Cleaner Water through FOG Prevention

Mike Kahle, Cobb Watershed Stewardship Environmental Program Supervisor

Though many of us are currently stuck at home and seemingly removed from our local waterways, our at-home habits can still have major negative impacts on the water quality in our communities. Fats, oils, and grease (FOG) are the by-products of food preparation, cooking, and baking processes. Some sources of FOG include ice cream, cheese, peanut butter, gravy, and salad dressing. When poured down the drain, FOG flows into the sewer collection system, which moves wastewater from homes and businesses to a water reclamation facilities (WRFs). The sewer collection system includes a network of pipes, that lead from the sinks, toilets, showers, tubs and appliances in the home. Anything that goes down a drain enters this sewer collection system.

FOG may seem harmless, easily disappearing down the drain; however, once in the pipes, it cools and clings to everything in the collection system. This restricts the flow of wastewater. Over time the FOG will completely block the pipes, forcing the sewage back up into the drain into a home, street, or creek (pictured right). If you are on septic, FOG can have the similar effects on your in-home wastewater treatment system. Regardless of



whether you are connected to sewer collection system or on septic, you have a vested interest in the dependability and life span of these systems and WRFs. Consider your role inside the home as part of a system maintenance plan that can prevent costly repair and replacement, including cleanups and costs associated with grease-related overflows. These overflows can enter nearby waterways, impacting the health of the environment and the quality of life for local residents.

The majority of sewer blockages and spills are grease-related and occur in residential areas. Help protect the environment and reduce system maintenance costs by properly disposing of FOG.

- NEVER pour fats, oils, and grease down the drain.
- Properly store and eat leftover food. When this is not possible, scrape leftover food into the trash instead of the sink.
- Pour, wipe with a paper towel, and scrape oil and grease from pans into a container before washing. Dispose of these materials in the trash.
- Fryer grease should be cooled, placed in a sealed container, and disposed of in the trash.
- Use sink strainers to catch food, then empty the strainer contents into the trash.

Check with your local water utility to see what programs they might have in place to assist you with FOG disposal, prevention, and tips that pertain to your local requirements.

AAS COVID-19 MONITORING GUIDELINES

- If you or any member of your household is feeling unwell with COVID-19 symptoms, DO NOT MONITOR
- Wash your hands thoroughly before and after monitoring
- Wear personal protective equipment (rubber gloves, cloth face mask) when in public places and when working near individuals that are not from your household
- If your monitoring partner(s) are outside of your household:
 - Limit your monitoring group size to no more than 5 people
 - \circ If your group size is typically larger than 5, split monitoring events among members
 - Divide tasks as much as possible so only one person is touching the monitoring equipment, e.g. one person samples and tests while the other counsels by phone and enters data
 - Maintain a 6 ft distance (your "wingspan" plus your partner's no fingers touching)
 - Use disinfecting cloths or spray to wipe down sampling equipment prior to passing off equipment
 - Practice no-contact relay when passing off equipment

We understand if current guidelines or closures impact your ability to monitor at the moment. <u>Please follow</u> <u>local public health authority recommendations and respect any public land closures.</u>

Community Partnership Highlight: Adopt-A-Wetland

Luke Roberson, Adopt-A-Wetland Coordinator

UGA Marine Extension and GA Sea Grant's objectives are research, education, and outreach. <u>Adopt-A-Wetland</u> (AAW), a program coordinated by UGA Marine Extension and Georgia Sea Grant, is working to fulfill these onjectives by increasing public awareness of issues facing our state's wetlands. Coastal stewardship and monitoring tie our goals together and provide experiential education for students, teachers, and volunteers. Coastal communities need data collection on water quality issues because of their vulnerability to many impacts from climate change and sea level rise. The four main coastal water chemistry parameters – dissolved oxygen, pH, temperature and salinity – are all important indicators of wetland health. AAW's robust volunteer effort acts as a force multiplier to the research done by the



Skidaway Institute of Oceanography, GA DNR, and many other scientific institutions on the coast.

AAW's goals include integrating water quality sampling technology into schools and outdoor education centers along the coast, as well as expanding opportunities for underserved communities to learn and practice coastal stewardship. To achieve these goals, we are writing grants to install several automated water quality sensors at outdoor education centers around Chatham County and conducting workshops to teach educators about how they can integrate data collected from these instruments into their curriculum. These grants would also pay for students to attend classes at our campus to learn why we collect water quality data and how it pertains to coastal stewardship.



Luke Roberson (pictured left) has been the AAW Coordinator since July 2019, and in his time heading the program, he has worked to develop partnerships with other organizations to further expand the program's volunteer base. His past work with the Riverkeepers, the National Park Service, and UGA Cooperative Extension Service has provided opportunities for more trainings and educational programs, and therefore the ability to reach more people than could have been done alone. This past January AAW partnered with the US Fish and Wildlife Service to conduct the first bilingual chemical monitoring training in AAW's history, providing engagement opportunities for previously underserved communities. These relationships also go a long way in writing grants to support further development and tighter bonds between environmental educators and volunteer coordinators.

Becoming a good coastal steward requires maintaining a mindset of serving the many over the individual. If a person feels as though he or she is the only one picking up trash or collecting data, things can get discouraging quickly. However, joining a monitoring team, participating in a cleanup, and volunteering are some of the best ways to make a bigger impact and maintain a high level of involvement. It is always inspiring to meet a group of enthusiastic people who are dedicating their time to protecting natural resources and are ambitious to learn more and spread the word. This dedication is something we try to foster each day on the job.

The UGA Marine Extension and Georgia Sea Grant Adopt-A-Wetland program is supported in part through a grant provided by Georgia Environmental Protection Division and funded by the U.S. Environmental Protection Agency under the Provisions of Section 104(b)(3) of the Federal Water Pollution Control Act, as amended.



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Board Member Highlight: Jean Brown, Georgia Power

Jean has always enjoyed spending time outdoors. She grew up in DeKalb County playing in Burnt Fork Creek, which ran through the woods behind her house. In high school, she had the opportunity to take ecology classes at Fernbank Science Center. Her studies there further inspired her decision to pursue a degree in environmental sciences. Jean is a graduate of University of Georgia's Warnell School of Forestry and Natural Resources with a concentration in Environmental Resource Assessment. Her senior project involved comparing the usefulness and effectiveness of the Environmental Protection Agency's Rapid Bioassessment Protocols, which included extensive work in benthic macroinvertebrate identification.

Jean began her career at the Environmental Protection Division in the Point Source Program in municipal wastewater compliance, later accepting a position in the Non-Point Source Program in erosion and sediment control. It was during this time she first became involved with Adopt-A-Stream, as they were located just down the hall from



her office. She would borrow their nets and field equipment every once in a while to lead a friend's biology class in macroinvertebrate surveys. While working for EPD, she earned her master's degree in Environmental Engineering Sciences with a concentration in Systems Ecology and Ecological Engineering from the University of Florida. She was also appointed and then elected a council member in the City of Clarkston. As a council member, she organized Adopt-A-Stream trainings, monitored the city's Adopt-A-Stream site in Friendship Forest, and coordinated Rivers Alive and Keep DeKalb Beautiful cleanup events for the city.

Jean's current position is with Georgia Power's Environmental & Natural Resources Department, where she has served several roles including developing, communicating and implementing water-related environmental programs for construction stormwater, drinking water and industrial wastewater. In these roles and as an Adopt-A-Stream board member, she continues to carry on Georgia Power's commitment to being an environmental steward, which includes involvement in educational partnerships and conservation projects.

Jean lives in Atlanta with her husband Beau, their two boys, and their dog Wally. They enjoy exploring new restaurants and cuisines, traveling, and getting outdoors.



Confluence 2020 Keynote Speaker

JOE COOK

Georgia River Network Paddle Georgia Coordinator, River User's Guide Author

"Malcolm X, Eugene Talmadge, and Naked Yankees in Georgia Rivers: Tall tales from the shoals, sandbars, and sloughs of our state"

Joe Cook grew up in Atlanta rafting the Chattahoochee River, as was popular in the late 1970s and early 1980s. This was where he first fell in love with rivers. As an adult, he traveled the length of the Chattahoochee and Apalachicola rivers on a 540-mile, 100-day voyage. In 2005, he began working with Georgia River Network to create Paddle Georgia, an annual week-long canoe/kayak adventure that takes place on a different Georgia river each year. While serving as the Paddle Georgia coordinator, he also authored Georgia River Network's River User's Guide book series, which includes guides to the Etowah, Chattahoochee, Flint, Broad, and Oconee rivers. A nature/landscape photographer, his writing and photographs have been published in numerous national and regional magazines and featured in three books. He is a 1988 graduate of Berry College.

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Dragonfly



Riffle Beetle



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CONFLUENCE 2020 IS GOING VIRTUAL!



- The conference will now be free and available to anyone with internet access!
- Sessions will be held online throughout the month of August with the keynote and awards taking place on Saturday, August 29th. Full schedule to be posted on the Adopt-A-Stream website.
- In addition to all of the wonderful sessions and workshops, there will also be a number of opportunities to have fun and socialize with your fellow volunteers, such as virtual water-related trivia, kids sessions, movies, and much more!
- Be sure to join the Confluence 2020 Facebook Group to receive conference updates and connect with other Adopt-A-Stream volunteers! If you have any questions, please contact us at AAS@dnr.ga.gov.

Stay Connected!

Like us on Facebook and follow us on Instagram to stay up-to-date on the latest Adopt-A-Stream news! Use #gaadoptastream or tag us when you post photos of yourself monitoring. We love to see all the good work you do!



Georgia Adopt-A-Stream



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