S.C. Department of Health and Environmental Control

Aquatic Science Programs 2022

A summary of our work in 2022 and what's in store for 2023 January 2023

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PFAS & State Ambient Surface Waters

This year kicked off a statewide, multi-agency per- and polyfluoroalkyl substance (PFAS) ambient surface waters study. Matt Baumann, Aquatic Scientist in the Division of Water Quality, is a part of a team tasked with the development and implementation of a project to investigate PFAS in the state's waters and aquatic animals. He is assisted by Aquatic Science Programs' (ASP) staff, Division of Water Quality staff, and Bureau of Environmental Health Services (BEHS) regional sampling teams who are collecting surface water PFAS samples at 107 sites statewide on a quarterly basis. The surface water program is designed to survey both the extent and the changes in seasonal conditions, including precipitation and stream flow that may impact PFAS concentrations across state surface waters.

In addition, DHEC shellfish officers assisted this project from July to September. The officers collected oysters at 24 coastal locations ranging from Myrtle Beach down the coast to Beaufort. The oyster tissue will be analyzed to determine PFAS concentrations. DHEC staff also worked in collaboration with SCDNR who collected blue crabs at nine locations from Winyah Bay to the Lowcountry. The blue crabs' soft tissue was analyzed for PFAS similarly to the oyster tissue. Further collection of blue crabs from additional locations will occur in 2023.

In October, Taylor Shearer, ASP launched a program to test for PFAS in a variety of freshwater fish species at 20 locations statewide. In 2022, staff completed sampling at nearly half the sites with the remaining sampling expected to occur in early 2023. All data will be made publicly available once the internal quality control and review is complete.

For more information on this project scan the QR -->

Aquatic Science Programs Staff Embracing the Future

Aquatic Science Programs and Adopt-A-Stream staff conducted a multi-day workshop for a group of college students from Historically Black Colleges and Universities (HBCUs) around the Southeast. The students were staying in-town for a summer session at the Savannah River Environmental Sciences Field Station. The workshop included classroom instruction on water quality monitoring and sampling procedures as well as multiple field days where students were able to participate in macroinvertebrate sampling, using water quality sampling instruments, and collecting samples according to SC Adopt-a-Stream methods. There were also plans to involve our fish sampling staff but unfortunately, due to high water levels, the conditions were not conducive to using the backpack electrofishing equipment.

The students were mostly in environmental or public health programs and had lots of great questions and feedback throughout the workshop. ASP staff found the experience rewarding, knowing that these students could be the future of environmental investigations across the nation. Justin Lewandowski reflected on the enthusiasm of the students, "They were really engaged with the material and were super eager to sample in the creeks". He went on to say how they enjoyed identifying macroinvertebrates collected and that the students, "did a great job". In addition, ASP's field equipment manager pointed out that the students were, "engaged and attentive" and excited that the department was able to inspire at least one of the students enough that they showed interest in an internship. ASP staff are happy to announce that this student will be joining ASP as an intern this upcoming year.

Interested in learning more about the state's Adopt-A-Stream program? If so, visit scdhec.gov/environment/your-water-coast/adopt-stream-program

Students wading in Horse Creek at Caver Park in Aiken County.

SCDHEC's Adopt-A-Stream coordinator (Sierra Hylton) examining a macroinvertebrate with a student.

Aquatic biologists Justin Lewandowski & Scott Castleberry sifting through net collections as students look on.

Students sifting through collected samples to identify the presence of any macroinvertebrate specimens.

Busy Year on a Macro(invertebrate) Level

Not only did our macroinvertebrate team conduct their regular sampling of 70 total sites and completing their target 10% of quality assurance resampling, they also were involved in several special projects this year. Notably, sampling was conducted in response to Adopt-A-Stream volunteer concerns regarding the water quality and declining macroinvertebrates along Beaverdam Creek. The macro field team sampled both up and downstream of a potential impact. The results suggest there is an impact to the stream and DHEC staff are working to determine the next steps to take to protect the stream. Additionally, there were two stations monitored for nonpoint source pollutants under the 319 Section of the Clean Water that were visited by the macroinvertebrate aquatic biologists this year.

Aquatic biologists David Eargle & Scott Castleberry performing field work over the summer.

Decrease in Harmful Algal Blooms Around the State

Although the chlorophyll and toxin lab were busy this year receiving and analyzing samples from around the state, it was a comparatively slower year than last. Through regular, monthly sampling the Aquatic Science Programs' lab received and analyzed 622 samples for toxin analysis and 977 chlorophyll samples from the beginning of April through the end of October. In addition to these 1,599 samples, there were 40 specific complaint samples received. Of these 40 complaint samples, there was only a single advisory issued this year which is a decrease from last year's advisories issued.

Number of samples received in 2022 with percent difference from 2021.

Chlorophyll	Cyanotoxin
977	622
+6.55%	-3.38%

Our resident Chlorophyll & Harmful Algae specialist, Emily Bores, collecting a sample for analysis.

For an interactive, live update of current Harmful Algal Bloom advisories check out the GIS App at: Algal Bloom Monitoring (arcgis.com)

Other Items of Interest

SC Estuarine & Coastal Condition Assessment Program
Aquatic Science Programs staff were involved with the coastal sampling for the second year in Other projects completed by ASP staff include the SC Estuarine & Coastal Condition Assessment Program (SCECAP) which wrapped up another successful year in late August. This year Nick Pangborn and Kay Wilson had the opportunity to kayak with SCDNR staff to a site that was easier to access by paddling than by the typical power boat method. Not very often you get to kayak to a job site. The 2019-2020 SCECAP Report has been finalized and we are excited to see it published for the public soon.

To find past reports and to check for the latest releases, check out SCDNR's website at:
dnr.sc.gov/marine/scecap/reports.html

DHEC and EPA's National Rivers and Streams Assessment
Looking forward, ASP staff are proud to announce they will be collaborating with the EPA for the 2023-2024 National Rivers and Stream Assessment (NRSA) as part of the larger National Aquatic Resource Surveys (NARS), which collect data nationwide in partnership with local states and tribes in order to assess the nation's waters. This assessment spans from coastal waters, through lakes to rivers and streams, and wetlands.

This will be the second nationwide assessment ASP staff have assisted with in the past four years following the 2020 involvement in the National Coastal Condition Assessment (NCCA) which was successfully completed in early September 2020.

More information on the NARS program can be found on the EPA's website:
epa.gov/national-aquatic-resource-surveys

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Additional Information

Visit scdhec.gov/bow/aquatic-science-programs to learn more about our projects

Contact info for each specific program can also be found via the website listed above