APNEP Science & Technology Report: March 2020

The following are highlighted events involving APNEP staff from September 2019 to March 2020 (since the last STAC meeting) with an emphasis on science and technology, followed by planned events for the remainder of 2020.

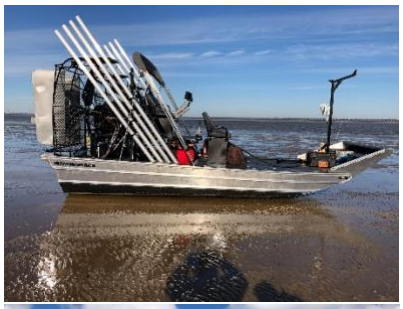
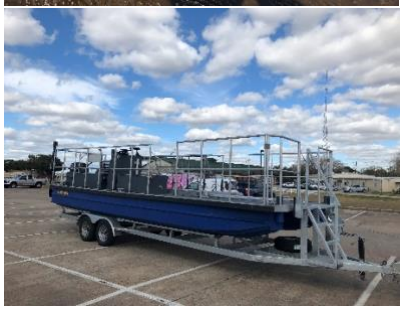
September 13: SAV survey of low-salinity sentinel site at Albemarle Sound (Perquimans River), Staff support of ECU Team
September 24-25: North Carolina Wetland Summit at NCSU Raulston Arboretum
September 30: SAV aerial survey imagery review at NOAA Beaufort
October 4-6: SAV survey of low-salinity sentinel sites at Albemarle Sound (Kitty Hawk Bay and North River), Staff support of ECU Team
October 7: Discussion with Wetlands MAT technical lead Rick Savage
October 8: Observers during VIMS adaptive management training to VA-DEQ senior management
October 21: Discussion with Doug Newcomb (FWS) re: remote sensing opportunities
November 15: Discussion with Cat Bowler (Audubon NC) re: future SAV sentinel sites in Currituck Sound
November 19-20: NC Sea Grant coastal conference in Wilmington
November 25: SAV Monitoring workshop at UNC-IMS
November 26: Ecological Flows action team workshop at NC-DEQ
December 6: North Carolina coastal resilience conference at ECU
January 14-15: APNEP Leadership Council strategic planning workshop in Beaufort
January 21: Chowan River ecological endpoint discussions with NC-DWR
January 27: Ecological Flows action team workshop at NC-DACS Raleigh
January 30: STAC Monitoring subcommittee workshop at NC-DEQ
February 6: APNEP SAV aerial survey planning meeting
February 7: STAC Executive Board teleconference
February 18: APNEP Air Resources MAT workshop at EPA-RTP
February 26: NC Aquatic Weed Control Council meeting at NC-DEQ
March 4: SAV-Water Quality technical workshop at NC-DEQ

Upcoming

May 20: APNEP Leadership Council meeting
September 16: STAC summer 2020 meeting

STAC Member Reports (listed in order of submission)

Taylor:

- Finalized the design, construction, and review of one airboat and two pontoon boats built specifically for Coastal Zone Soil Survey (CZSS) activities in Albemarle-Pamlico and other sounds and bays around the country. Three more pontoons are currently being constructed.
  - 
  - 
- Conducted a NRCS Soil and Plant Science Division staff conference and CZSS training. This was a joint effort with Saint John's River Water Management District and University of Florida Whitney Lab for Marine Bioscience. The training and classroom discussions were headquartered at the Whitney Lab and focused on CZSS methods and science.
- Attended, and presented at, Delaware Wetlands Conference, Wilmington, DE.
- Assisted US Forest Service in post-logging disturbance monitoring in Uwharrie and Croatan National Forest.
- Co-Authored presentation for NC Coastal Conference with NC State Professor Matt Ricker. Subject was the ongoing, joint project between NRCS and NC State researching Saltwater Intrusion and Carbon Stocks in the soils of Albemarle and Pamlico Sounds. Meeting was held in Wilmington, NC.
- Conducted numerous meetings to finalize plans associated with Virginia Institute of Marine Sciences (VIMS) and NC State projects to document Carbon stocks and map saltwater intrusion in Albemarle and Pamlico Sounds as well as Chesapeake Bay.

Brittle: Anadromous sampling has begun on the Nottoway and Blackwater Rivers.

Bodkin: SAWSC = South Atlantic Water Science Center

- **SAWSC Scientist Presents Results from Regional Road Salt-Water Quality Study to Cooperators in Maryland**
  - **What:** SAWSC Hydrologist Rosemary Fanelli co-presented results from a recent study quantifying the water quality and ecological effects of road salt applications on small urban streams throughout the Eastern U.S. She and collaborator Joel Moore from Towson University presented to local and regional scientists and cooperators at the MD-DE-DC WSC monthly seminar series to highlight their recently published dataset and study.
  - **Background:** Seasonal deicer applications increase conductivity levels and chloride concentrations in streams, which may contribute to lower stream biodiversity. Understanding where and when these concentrations exceed ecologically-relevant thresholds is needed to inform watershed management and protection activities.
  - **Journal/Outlet:** Environmental Science & Technology
  - **Publication Status:** Available online https://pubs.acs.org/doi/10.1021/acs.est.9b04316 [pubs.acs.org]

- **SAWSC Scientist Gives Invited Seminar the University of North Carolina – Charlotte**
  - **What:** SAWSC Research Physical Scientist Kristina Hopkins was invited to give a seminar at the Department of Geography and Earth Sciences at the University of North Carolina – Charlotte. Her seminar discussed hydrologic signals and surprises in urban streams.
  - **Background:** The University of North Carolina – Charlotte Department of Geography and Earth Sciences is comprised of physical, natural and social scientists from a variety of disciplinary backgrounds.

- **Upper Flint Regional Water Council Meeting**
  - **What:** SAWSC Debbie Gordon attended the Upper Flint Regional Water Council meeting to answer questions on USGS groundwater data. The meeting was held to update the Upper Flint Regional Water Council on groundwater availability, agricultural water data, population projections, and Metro Atlanta Water District planning.
  - **Background:** In 2008 Georgia embarked upon statewide comprehensive regional water planning. Through the development of regional water plans, the 10 regional water councils determine preferred water management practices to meet each region's future water resources needs. Each Council meets several times per year to discuss local water-resources issues.

- **SAWSC Connects Tybee Island with USGS Coastal Change Hazards Scientists**
  - **What:** As a follow-up from a recent National Academy of Sciences Flood Resiliency Workshop, SAWSC worked with Southeast Region to connect the scientists from the USGS Coastal Change Hazards program in St. Petersburg with representatives of the City of Tybee Island, Georgia. This webinar provided a broad overview of USGS capabilities for coastal hazards events for the City representatives.

- **Background:** The City of Tybee Island was a representative at the recent National Academy of Sciences Flood Resiliency Workshop in Atlanta, Georgia where SAWSC Assistant Director Brian McCallum presented about USGS capabilities in response to coastal storms. Discussions following the presentation in December led to the scheduling of a webinar with the USGS Coastal Change Hazards scientists in St. Peterburg thanks to the assistance of Athena Clark, SER Science Advisor and USGS Coastal Storm Team Leader. Tybee Island is dealing with ongoing flooding issues due to a multitude of issues, and is interested in the potential of establishing a Coastal Change Hazards station on Tybee, along with other potential USGS monitoring, to have a better understanding of these issues.

- **SAWSC scientists Gives Webcast to Chesapeake Stormwater Network**
  - **What:** SAWSC scientist Kristina Hopkins gave a presentation titled, "New Insights on using Green Stormwater Infrastructure to Reduce Suburban Stormwater Runoff" to the Chesapeake Stormwater Network. Hopkins highlighted recent findings from her research assessing the hydrologic impacts of suburban development with a high density of green stormwater infrastructure.
  - **Background:** The Chesapeake Stormwater Network helps align and integrate the efforts of thousands of individuals working on stormwater management across the Chesapeake Bay region and around the world.

- **Multi-Region Assessment of Pharmaceutical Exposures and Predicted Effects in USA Wadeable Urban-Gradient Streams**
  - **What:** SAWSC Scientists Paul Bradley, Celeste Journey, Bradley Huffman, and OK-TXWSC scientist Peter Van Metre were coauthors of a journal article on the USGS Regional Stream Quality Assessment of pharmaceutical contamination in urban-gradient headwater streams in four U.S. regions, including in streams with no National Pollutant Discharge Elimination System-permitted wastewater-treatment plant (WWTP) discharges.
  - **Background:** Human-use pharmaceuticals in urban streams connect aquatic-ecosystem health to human health. Pharmaceutical contaminants are widely reported in larger streams due to historical emphasis on WWTP sources, with limited information on pharmaceutical exposures and possible effects in smaller headwater streams. In 2014-2017, the USGS measured 111 pharmaceutical compounds in more than 300 headwater streams in four regions across the US. Simultaneous exposures to multiple pharmaceutical compounds (mixtures) were observed in 91% of streams, with 80% of the analyzed pharmaceuticals detected at least once across all sites. The results support the need for watershed-scale approaches to address in-stream pharmaceutical contamination.
  - **Publication Status:** Available online https://doi.org/10.1371/journal.pone.0228214 [doi.org]

Moorman: USFWS staff met in January to discuss regional refuge priorities for all refuges in the Albemarle-Pamlico geography. The group is working on developing a strategic plan for the

region's Refuges and expect the plan to be ready this year. The plan is complimenting a national USFWS effort that is identifying individual Refuge management priorities at all Refuges in the system.