POSTER PRESENTATION

ALGAL COMMUNITY DYNAMICS IN THE SAVANNAH RIVER ESTUARY UNDER ANTHROPOGENIC STRESS

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Estuaries are naturally diverse systems with mixed freshwater and marine water in addition to being exposed to constant tide shifts. Anthropogenic alternations that are occurring on the Savannah River are expected to change the hydrology of the ecosystem and effect algal community structure and composition. The Savannah Harbor Expansion Project, which involves the widening and deepening of the river by 1.5 m to accommodate for larger vessels. It is anticipated that this project will affect tidal height, influx of salt water, and overall turbidity, which will disturb algal populations. Baseline data from the Savannah River mudflats were obtained in 2011. Algal community indices were assessed along with live to dead diatom ratios. Living diatoms were classified as freshwater, marine, or brackish in addition to planktonic, epipelic, and benthic. In 2011, deposition of marine planktonic species and high amount of dead diatom frustules were documented. In 2016, we repeated sampling at the original location followed the same standard protocols as those conducted in 2011. In the analyses of the whole algal community there was a reduction of 59% of live diatoms. Live diatoms were replaced by filamentous cyanobacteria genera such as Phormidium and green coccoid algae, classified as freshwater. There was a decrease in abundance of chain forming marine plankton species potentially due to higher sedimentation rates. Species richness within cleaned diatom communities decreased by 15.3%, but *Cymatosira belgica* Grunow remained the dominant species with the average of 40% relative abundance. Marine epipelic diatoms, like *Tryblionella granulata* (Grunow) Mann and *Rhaphoneis amphiceros* (Ehrenberg) Ehrenberg declined significantly. More than 10% of algal species are potentially new to science. Due to the negative affect of dredging and more sediment deposition, diatom communities show significant change due to increase in turbidity, lower light availability, higher temperature, and higher anthropogenic waste.