INTERNAL PHOSPHORUS LOADING FROM USJRB LAKES

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Harmful algal blooms (HABs) are an environmental problem in aquatic ecosystems across Florida, including within the Upper St. Johns River Basin (USJRB). Although large amounts of the nutrients that fuel these blooms come from allochthonous sources, internal nutrient cycling within lake systems can also supply bioavailable nitrogen (N) and phosphorus (P). To evaluate the importance of this internal source, it is necessary to assess sediment biogeochemistry and the flux of nutrients from the sediments to the water column. We studied these characteristics in two lakes in the USJRB that experience HABs, Blue Cypress Lake and Lake Washington. We collected 10-cm-long, mud-water interface (MWI) cores for P-fractionation analysis and 80-cm-long MWI cores to generate depth profiles of total nutrients (C, N, P). Additionally, short MWI cores were used in a laboratory experiment that measured flux of dissolved N and P forms from benthic sediments to the overlying water column. This study yielded new information on how internal nutrient cycling affects primary production in two Florida lakes and provided insights into the importance of legacy nutrient loading.

PRESENTER BIO: Dr. Schafer is a research scientist at the University of Florida's Whitney Laboratory for Marine Biosciences located in St. Augustine, Fl. She conducts biogeochemical research on brackish and freshwater aquatic systems throughout the state of Florida.