ALGAL AND PERIPHYTON BIO-ASSESSMENT OF AGRICULTURAL WETLAND, STREAM AND RIVER

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Biological assessments allow for integration in space and time of the anthropogenic alterations on the landscape. We screened algal samples collected from an agricultural site with wetland, stream and river system. A monitoring well network is in place to target likely areas of surface and subsurface flow, transitions between croplands and floodplains, floodplain, any jurisdictional wetlands. Monitoring and wells helped to identify existing hydrologic nutrient plumes from past activities (former feed lot and pasture, row crop agriculture) into and through floodplain wetlands. We also monitored surface waters at the site (n = 15; wetlands, Rose Creek, Oconee River, drainage ditches). Besides flows, water quality measures monitored in wells and surface waters will including nitrate-nitrite, phosphate, total nitrogen and phosphorus. Surface waters with elevated levels of nutrients supported harmful cyanobacteria, and low diversity of tolerant macroinvertebrates and fish. We also assessed the biotic integrity of the surface water by characterizing the periphyton, benthic macroinvertebrates, and fish communities in the individual catchments. Because the study site is split into one catchment dominated by pasture and an abandoned feed-lot that slopes towards the natural floodplain wetlands of Rose Creek, and a second catchment dominated by intensive row crop agriculture that slopes towards agricultural floodplain wetlands of the Oconee River, we anticipate unique hydrologic and run-off chemical relationships between agricultural uplands and wetlands in each catchment.

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