

Bugs & TMDLs: An Evaluation of Macro-Invertebrate Communities in the St. Johns River, Florida

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Biographical Sketches of Authors

Michelle is an environmental scientist contracted to the St. Johns River Water Management District. She has over 10 years experience in estuarine and riverine ecology. The investigation of macro-invertebrates has come naturally given her Cajun heritage and appetite for those organisms that are spineless, hard shelled, and boiled with spices! She has evaluated macro-invertebrate communities in the Gulf of Mexico and in oligohaline (Lake Pontchartrain) and blackwater river habitats (St. Johns River). Michelle is currently investigating relationships of adjacent land use on macro-invertebrate communities within SAV beds and, separately, land use effects on first order streams.

Nadine received a B.A. in Geography in New Zealand in 1999 then spent two years helping to start a GIS Division for a surveying firm in Boston. She now works for the environmental engineering firm, Jones, Edmunds and Associates, as an onsite GIS consultant to the St. Johns River Water Management District. Her work supports environmental science research for scientists working in the Lower St. Johns River Basin. Major projects to date include: GIS based surface watershed delineation, GIS based watershed modeling, SAV and sediments mapping and hyperspectral imagery interpretation.

Dean received his B.S. in Biology from the University of Texas, Arlington and his Ph.D. in Biology from Arizona State University. Graduate research included ecosystem ecology, food web dynamics, and molecular ecology. Post-doctoral work at Arizona State included reservoir ecology and management. Currently he is an environmental scientist with the St. Johns River Water Management District in Florida. His research focus is aquatic macrophyte ecology and biology, stream ecology, and wetland ecology.

Abstract

The St. Johns River (SJR) is a unique blackwater system in northeast Florida that is influenced by salt water from subterranean spring flow and the Atlantic Ocean. It supports a diversity of both freshwater and marine species. This estuarine system has been identified as an impaired water body and listed on the EPA 303(d) list due to problems associated with cultural eutrophication. Algal blooms, fish disease, fish kills, loss of aquatic habitat and bacterial contamination have been identified as biological indicators of poor water quality. The St. Johns River Water Management District (SJRWMD) is currently implementing management strategies for developing and identifying biologically sound TMDLs (total maximum daily loads) and PLRGs (pollution load reduction goals). This process includes an evaluation of macro-invertebrate communities within hydrologic sub-basins. Invertebrate taxa data are collected and statistically evaluated within sub-basins that vary due to land use patterns, soils, and hydrology. These data are utilized to evaluate sub-basin conditions and any potential changes due to implemented management strategies. Study and monitoring results will be presented and discussed within the context of TMDL implementation and SJRWMD natural systems program goals.