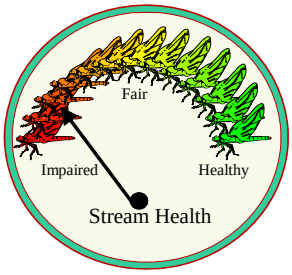


EcoSummary

Wakulla Springs

8/10/2006

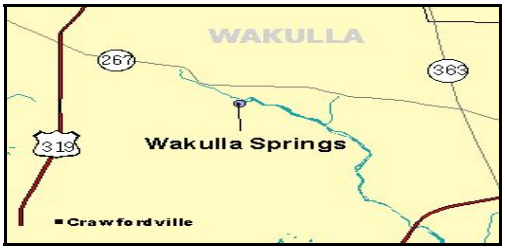


Background

The Florida DEP Bureau of Laboratories conducts quarterly sampling of the Wakulla River within the boundaries of Wakulla Springs State Park, at a site located just below the tour boat turn-around area. Data from these efforts is used for documenting conditions within the river and for making resource protection decisions. Wakulla Springs State Park is located in Wakulla County, Florida; see Figure 1. The Wakulla River begins in the park, flows south, and joins the St. Mark's River before flowing into the Gulf of Mexico. Wakulla Springs is a Floridian Aquifer-dominated system and is known for its recreational and aesthetic qualities.

Wakulla Springs was sampled on August 10, 2006 as part of the quarterly monitoring program. Water chemistry samples were collected for ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), total phosphorus, Enterococci, Escherichia coli, fecal coliform, total coliform, and other analyses; see Figure 2. Habitat assessment, and benthic invertebrate stream condition index (SCI) sampling were also conducted. See Figure 3 for SCI scores over time.

Figure 1: Overview Map of the Wakulla Springs Area



Results

The nitrate-nitrite concentration in Wakulla Springs (0.47 mg/L) was higher than the values found in approximately 80% of Florida streams (0.32 mg/L); see Figure 2. Ammonia, TKN, and total phosphorus were all below the detection limits. Since the sampling site is about a mile downstream from the spring boil, nutrients are expected to be lower than those at the boil due to uptake by the heavy growth of vegetation in the river.

Enterococci and *Escherichia coli* concentrations were below the EPA single-sample guideline values of 61 CFU/100mL and 235 CFU/100 mL, respectively, for "designated beach areas." Fecal and total coliform levels complied with Class III water quality standards.

The SCI was recalibrated in 2004 in order to make it a more effective tool for evaluating ecological health of streams. The sampling method remained the same; only the index calculation was changed. The recalibrated SCI tends to produce a more stringent evaluation, since two poorly performing metrics from the old SCI were discarded (% Diptera and number of chironomid taxa). Five additional metrics correlated with human disturbance were added, for a new total of ten metrics. The ten metrics are: total taxa, Ephemeroptera taxa, Trichoptera taxa, percent filterers, long-lived taxa, clinger taxa, percent dominance, percent Tanytarsini, sensitive taxa, and percent very tolerant taxa. More details can be found in the FDEP Standard Operating Procedures, LT 7200. The recalibrated SCI went into effect June 8, 2004, when the FDEP Quality Assurance Rule was finalized. SCI samples collected after that time may yield different results from prior evaluations. Figure 3 illustrates the SCI scores since the recalibration.

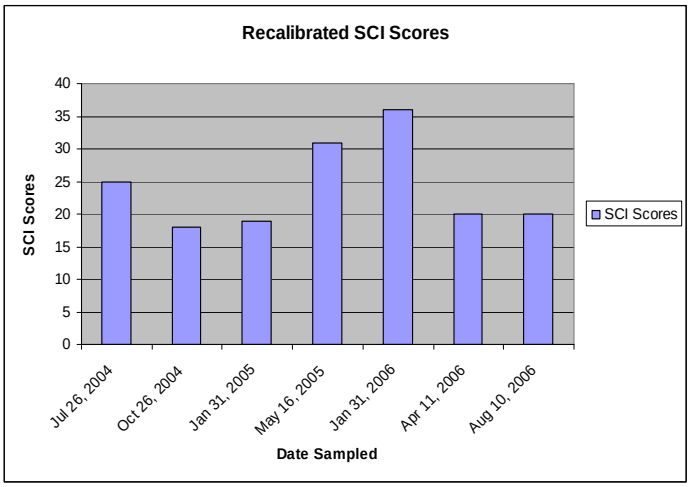
The overall habitat assessment score (123) was in the "optimal" range. Diatoms, with some blue-green and green algal taxa, dominated the periphyton community. The SCI score for Wakulla Springs was 14. A 2007 adjustment of the SCI indicates that SCI scores of 34 or higher are actually associated with healthy conditions. The low SCI score is potentially related to periodic habitat smothering and low dissolved oxygen levels associated with excess *Hydrilla* growth. In conclusion, elevated nitrate-nitrite and *Hydrilla* control continue to be issues of concern in Wakulla Springs.

Figure 2: Data Table

WAKULLA SPRINGS			
Sampling Date	8/10/2006	**Physical-Chemical Data**	
Macroinvertebrate Data		Habitat Assessment Score	123
SCI Score	14	Temperature (deg. C)	21.6
SCI Evaluation	Poor	pH	7.5
Chemistry Data		Dissolved Oxygen (mg/L)	5.3
Turbidity (NTU)	0.2	Specific Conductance (umhos/cm)	296
Color (PCU)	5	**Bacteria Data**	
Ammonia (mg/L)	0.01 U	*Escherichia coli* (col/100 mL)	2 B
Nitrate-Nitrite (mg/L)	0.47	*Enterococci* (col/100 mL)	2 K
TKN (mg/L)	0.08 U	Fecal Coliforms (col/100 mL)	14 B
Total Phosphorus (mg/L)	0.04 I	Total Coliforms (col/100 mL)	32 B

"U"=Below detection limit; "I"=Below practical quantitation limit; "B"=Results based on colony counts outside the acceptable range; "K"= Off-scale low.

Figure 3: SCI Scores Over Time



FOR MORE INFORMATION, CONTACT:
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