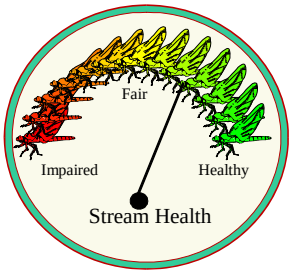


EcoSummary

Wekiwa Springs

5/25/2006



Background

Florida DEP's Division of Recreation and Parks selected Wekiwa Springs for biological and water quality monitoring. Data from these efforts will be used for documenting conditions within the park and for making resource protection decisions. Wekiwa Springs State Park is located in Orange County, Florida (Figure 1). The Wekiva River begins in the park and then flows northeast into the St. Johns River. Wekiwa Springs is a Floridan Aquifer-dominated system and is known for its recreational and aesthetic qualities.

Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), total phosphorus, color, turbidity, *Enterococci*, *Escherichia coli*, fecal coliform, and total coliform analysis; see Figure 2. Habitat assessment and benthic invertebrate stream condition index (SCI) sampling were conducted.

Results

The nitrate-nitrite concentration (1.1 mg/L) at the sampling site was much higher than the values found in 95% of Florida streams (0.97 mg/L or lower); see Figure 2. Elevated nitrate-nitrite levels in Wekiwa Springs are related to nitrogen loading in the recharge basin. TKN and ammonia concentrations were below practical quantitation limits. The total phosphorus concentration (0.14 mg/L) was lower than 50% of other Florida streams.

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

The overall habitat assessment score (125) was in the "optimal" range. Substrate availability and habitat smothering were habitat parameters of concern. Many habitats were coated with organic silt, a condition likely associated with decomposition of plant and algal growth in the river.

The SCI was recently recalibrated 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. SCI samples collected after that time may yield different results from prior evaluations.

The SCI score (43) was in the "healthy" category. Elevated nitrate-nitrite levels and silt smothering of habitats appeared to be the main stressors in Wekiwa Springs.

Figure 1: Overview Map of the Wekiwa Springs Area

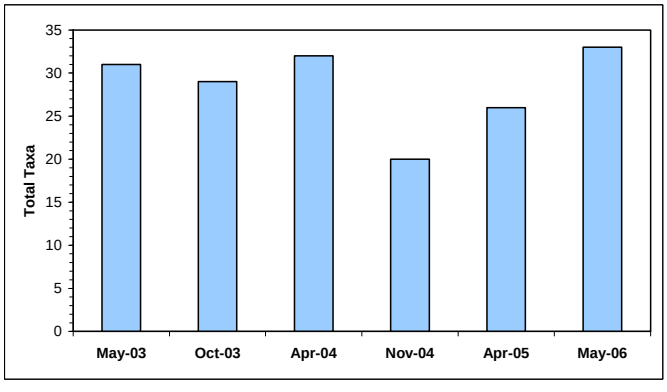


Figure 2: Data Table

WEKIWA SPRINGS			
Sampling Date	5/25/2006	**Physical-Chemical Data**	
Macroinvertebrate Data		Habitat Assessment Score	125
SCI Score	43	Temperature (deg. C)	23.6
SCI Evaluation	Poor	pH	6.7
Chemistry Data		Dissolved Oxygen (mg/L)	3.95
Turbidity (NTU)	0.7	Specific Conductance (umhos/cm)	367
Color (PCU)	5 U	**Bacteria Data**	
Ammonia (mg/L)	0.01 UQ	*Escherichia coli* (col/100 mL)	16 BQ
Nitrate-Nitrite (mg/L)	1.1	*Enterococci* (col/100 mL)	103 Q
TKN (mg/L)	0.16 U	Fecal Coliforms (col/100 mL)	10 BQ
Total Phosphorus (mg/L)	0.14	Total Coliforms (col/100 mL)	174 BQ

"I"- Below Quantitation Limit; "Q"- Information Only; "J"- Estimated Value; "U"- Below Minimum Detection Limit

Figure 3. Total Macroinvertebrate Taxa Over Time



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