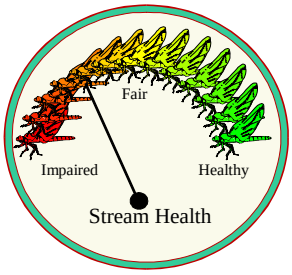


EcoSummary

Wekiwa Springs
11/9/2004



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, 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 (1.5 mg/L) at the sampling site was higher than the values found in 95% of Florida streams (Figure 2). Elevated nitrite-nitrate levels in Wekiwa River are related to nitrogen loading in the recharge basin. The total Kjeldahl nitrogen and ammonia concentrations were below quantitation limits (Figure 2). The total phosphorus concentration (0.13 mg/L) was lower than 50% of other Florida streams.

The *Enterococci* concentration (74 CFU/100 mL) was above the EPA single-sampling guideline value of 61 CFU/100mL for "designated beach areas." Some species of *Enterococci* are known to be free-living in warm waters; the applicability of the above guideline in Florida waters is currently under investigation. The *Escherichia coli* concentration (4 CFU/100 mL) was below the EPA designated beach guideline of 235 CFU/100 mL. Fecal and total coliform levels complied with Class III water quality standards.

The overall habitat assessment score (129) was in the optimal range (>120). Substrate availability and habitat smothering were habitat parameters of concern

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.

In conclusion, elevated nitrate-nitrate levels in Wekiwa Springs continue to be a main stressor. The SCI was in the "poor" category, potentially related to a recent hurricane causing hydrologic disturbance ("catastrophic drift") or the habitat smothering issue.

Figure 1: Overview Map of the Wekiwa Springs Area

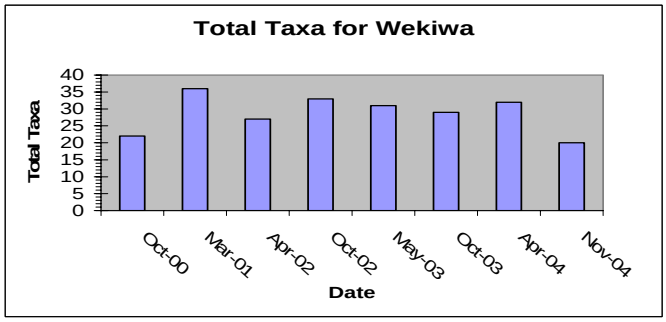


Figure 2: Data Table

Wekiwa Springs			
Sampling Date		11/9/2004	
Macroinvertibrate Parameters		Physical-Chemical Data	
SCI	20	Habitat Assessment	129
SCI Evaluation	poor	Specific Conductivity (umhos/cm)	349
		Dissolved Oxygen (mg/L)	3.48
Chemistry Data		pH (SU)	7.6
Ammonia (mg/L)	0.031 I	Temperature (deg C)	22.9
Nitrate-Nitrite (mg/L)	1.5	Bacteria Parameters	
TKN (mg/L)	0.19 I	*Enterococci* (col/100mL)	74 BQ
Total Phosphorus (mg/L)	0.13	*Escherichia coli* (col/100mL)	4 BQ
Color (PCU)	10	Fecal Coliforms (col/100 mL)	8 BQ
Turbidity (NTU)	0.2	Total Coliforms (col/100mL)	16 BQ

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

Figure 3. Total Taxa for Wekiwa Springs



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