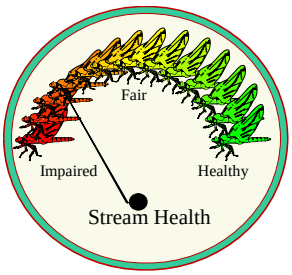


EcoSummary

Rock Springs
4/27/2005



Background

Florida DEP's Division of Water Resource Management selected Rock Springs for biological and water quality monitoring. Data from these efforts will be used for documenting conditions within the spring run and for making resource protection decisions. Rock Spring is located inside Kelly Park in Orange County, Florida (Figure 1). Rock Spring, which flows into Wekiva River, is a Floridan Aquifer-dominated system known for its recreational and aesthetic qualities.

During the October 15th, 2003 sampling of Rock Springs an additional sampling location (Rock Springs, Lower) was established due to concerns that human activity in the upper reach of Rock Spring run was artificially lowering the stream condition index (SCI) score. A site was established down stream of the swimming area that appeared to receive less traffic from people using the spring run for recreation.

Samples were collected at both Rock Springs, Upper, and Rock Springs, Lower, sampling sites. 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 (Figure 2). Habitat assessment and benthic invertebrate stream condition index (SCI) sampling were conducted.

Results

The nitrate-nitrite concentrations at both sampling sites (1.5 mg/L, upper, and 1.4 mg/L, lower) were higher than those found in 95% of Florida streams (Figure 2). Elevated nitrate-nitrite levels in Rock Springs are related to nitrogen loading in the recharge basin. TKN and ammonia concentrations were below detection or practical quantitation limits at both sites. Total phosphorus concentrations were not problematic at the upper and lower stations of Rock Spring.

Habitat assessment scores were both in the "optimal" category, with the upper reach scoring 142 and the lower reach scoring 125. *Enterococci and Eschericia coli* concentrations complied with the EPA single-sample 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 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 for the upper reach of Rock Springs (9) was in the "very poor" category. The SCI score for the lower reach of Rock Springs (39) was somewhat higher, but still in the "poor" category. Elevated nitrate-nitrite concentration and poor macroinvertebrate community health continued to be parameters of concern in Rock Springs.

Figure 1: Overview Map of the Rock Springs Area

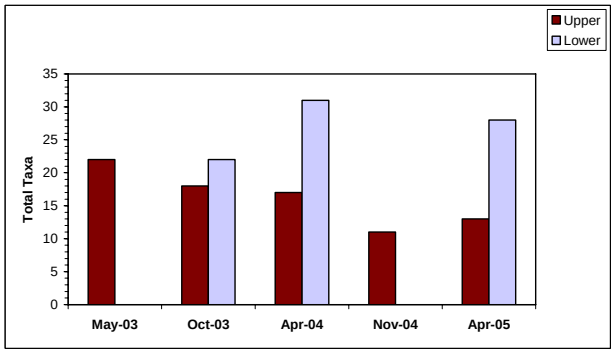


Figure 2: Data Table

ROCK SPRINGS, Upper and ROCK SPRINGS, Lower		
	Rock Springs, Upper	**Rock Springs, Lower**
Sampling Date	4/27/2005	4/27/2005
Macroinvertebrate Data		
SCI Score	9	39
SCI Evaluation	Very Poor	Poor
Chemistry Data		
Turbidity (NTU)	0.10	0.30
Color (PCU)	5 U	5 U
Ammonia (mg/L)	0.01 U	0.01 U
Nitrate-Nitrite (mg/L)	1.5	1.4
TKN (mg/L)	0.06 U	0.088 I
Total Phosphorus (mg/L)	0.099 A	0.093
Physical-Chemical Data		
Habitat Assessment Score	142	125
Temperature (deg. C)	23.6	23.7
pH	7.9	8.1
Dissolved Oxygen (mg/L)	1.2	3.1
Specific Conductance (umhos/cm)	248	249
Bacteria Data		
Escherichia coli (col/100 mL)	4 B,Q	114 Q
Enterococci (col/100 mL)	8 B,Q	20 B,Q
Fecal Coliforms (col/100 mL)	2 K,Q	20 B,Q
Total Coliforms (col/100 mL)	6 B,Q	120 Q

"U"=Below detection limit; "I"=Below practical quantitation limit; "B"=Based on colony counts outside the acceptable range; "K"=Actual value is known to be less than value given; "Q"=Outside of holding time; "A"=Average value

Figure 3: Total Taxa for Rock Springs



FOR MORE INFORMATION, CONTACT:
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