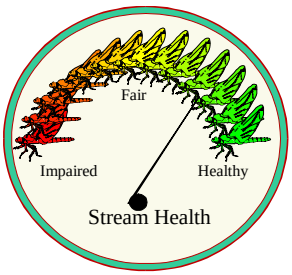


EcoSummary

Rock Springs
11/9/04



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.

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 (Figure 2). Habitat assessment, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling were conducted.

During the October 15th, 2003 sampling of Rock Springs an additional sampling location 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.

Results

The nitrate-nitrite concentrations at both sampling sites were higher than those found in 95% of Florida streams (Figure 2). Elevated nitrite-nitrate levels in Rock Springs are related to nitrogen loading in the recharge basin. The total Kjeldal nitrogen and ammonia concentrations (0.06 mg/L) were below the minimum detection limits on the upper and lower sites (Figure 2). Total phosphorus concentrations were relatively average at the upper and lower stations of Rock Spring (0.08 mg/L).

Enterococci and Eschericia coli densities complied with the EPA single-sample guideline value 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 score for the upper reach of Rock Springs received a 13 (the upper portion of the "very poor" category). 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.

Habitat assessment scores were both in the "optimal" category wit the upper reach scoring 131 and the lower reach scoring 144.

Elevated nitrate-nitrate was of concern in Rock Springs. Sampling for SCI usually occurs in the lower reach of the spring run, because recreational disturbances, such as wading and swimming (which dislodges organisms) results in unrepresentative conditions at the upper reach. Due to widespread windthrow of large trees, caused by a recent hurricane, the lower reach was not accessible for sampling, therefore the upper reach was sampled. The SCI scores in this area are not representative of the entire system.

Figure 1: Overview Map of the Rock Springs Area

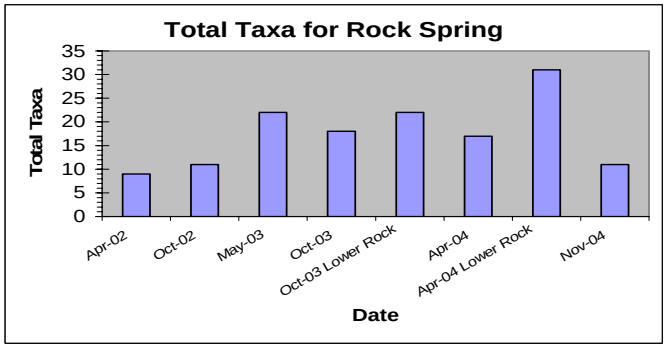


Figure 2: Data Table

Upper and Lower Rock Springs					
Sampling Date			11/9/2004		
Macroinvertibrate Parameters	Upper Rock	Lower Rock	Physical-Chemical Data	Upper Rock	Lower Rock
SCI	13	NA	Habitat Assessment	131	144
SCI Evaluation	Very Poor	NA	Specific Conductivity (umhos/cm)	266	266
			Dissolved Oxygen (mg/L)	1.8	2.97
Chemistry Data	Upper Rock	Lower Rock	pH (SU)	7.4	7.8
Ammonia (mg/L)	0.01 U	0.01 U	Temperature (deg C)	23.6	23.6
Nitrate-Nitrite (mg/L)	1.7	1.6	Bacteria Parameters	Upper Rock	Lower Rock
TKN (mg/L)	0.06 U	0.06 U	*Enterococci* (col/100mL)	26 BQ	34 BQ
Total Phosphorus (mg/L)	0.089	0.084 A	*Escherichia coli* (col/100mL)	26 BQ	14 BQ
Color (PCU)	5 U	5 U	Fecal Coliforms (col/100 mL)	16 BQ	20 BQ
Turbidity (NTU)	0.1	0.15	Total Coliforms (col/100mL)	34 BQ	86 Q

"B'-Based on colony counts outside the acceptable range; "Q"- Information Only, "U"-Below minimum detection limit; "I" –Value between method detection limit and practical quatitation limit

Figure 3. Total Taxa for Rock Springs



FOR MORE INFORMATION, CONTACT:
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