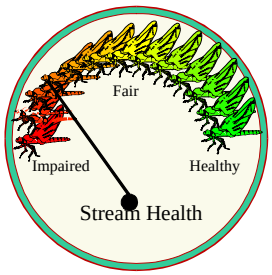


EcoSummary

Volusia Blue Spring
11/8/2004



Background

Florida DEP's Division of Recreation and Parks selected Blue Spring 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. Blue Spring State Park is located in Volusia County, Florida (Figure 1). Blue Spring Run flows south for approximately 1000 m into the St. Johns River. Blue Spring 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, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling were conducted.

Results

The nitrate-nitrite concentration (1.1 mg/L) at the sampling site was higher than the values found in 95% of Florida streams, and has increased when compared to the April 2004 sampling (0.35 mg/L). Elevated nitrite-nitrate levels at Blue Spring are related to nitrogen loading in the recharge basin. The Total Kjeldahl nitrogen concentration (0.2 mg/L) was below the values found in 95% of Florida streams (Figure 2). The total phosphorus concentration (0.059mg/L) was was below quantitation limit.

The stream condition index (SCI) was not sampled for Blue Spring due to a high water caused by a recent hurricane. 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 overall habitat assessment score (129) was in the optimal range. *Enterococci* and *Escherichia coli* concentrations complied with the EPA single-sampling guideline values of 61 CFU/100 mL and 235 CFU/100 mL, respectively, for a "designed beach area." Fecal and total coliform levels complied with Class III water quality standards.

In conclusion, elevated nitrate-nitrate levels continue to be the main stressor at Blue Springs.

Figure 1: Overview Map of the Blue Springs Area

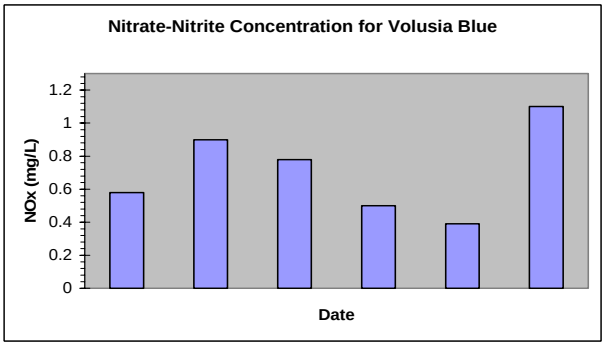


Figure 2: Data Table

Volusia Blue			
Sampling Date		11/8/2004	
Macroinvertibrate Parameters		Physical-Chemical Data	
SCI	NA	Habitat Assessment	129
SCI Evaluation	NA	Specific Conductivity (umhos/cm)	861
		Dissolved Oxygen (mg/L)	1.9
Chemistry Data		pH (SU)	7.3
Ammonia (mg/L)	0.015 I	Temperature (deg C)	22.9
Nitrate-Nitrite (mg/L)	1.1	Bacteria Parameters	
TKN (mg/L)	0.2 I	*Enterococci* (col/100mL)	6 BQ
Total Phosphorus (mg/L)	0.059 I	*Escherichia coli* (col/100mL)	2 KQ
Color (PCU)	5 UQ	Fecal Coliforms (col/100 mL)	4 BQ
Turbidity (NTU)	0.1 Q	Total Coliforms (col/100mL)	16 BQ

"U"- Below Detection Limit; "K"- Actual value is known to be less than value given ; "Q"- Information Only; "J"- Estimated Value; "I"-Below Quantitation Limit; "B"-Results based on colony counts outside the acceptable range

Figure 3. Nitrate-Nitrite Over Time for Volusia Blue



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