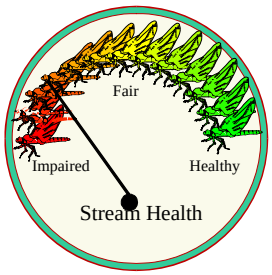


EcoSummary

Volusia Blue Springs

5/24/2006



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 Springs State Park is located in Volusia County, Florida; see Figure 1. Blue Springs 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 (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 (0.65 mg/L) at the sampling site was higher than the values found in 80% of Florida streams (exceeding 0.35 mg/L); see Figure 2. Elevated nitrate-nitrite levels at Blue Springs are related to nitrogen loading in the recharge basin. Ammonia and TKN concentrations were below minimum detection limit and practical quantitation limit, respectively. The total phosphorus concentration (0.069 mg/L) was about average for Florida streams.

The overall habitat assessment score (105) was in the "sub-optimal" range. Substrate diversity and substrate availability were habitat parameters of concern.

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 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 Blue Springs (17) was in the "very poor" range, probably related to the naturally high conductivity and periodic low dissolved oxygen conditions characteristic of the spring run. In conclusion, high nitrate-nitrite levels, lack of habitat availability for macroinvertebrates, and macroinvertebrate community health were the parameters of concern at Volusia Blue Springs.

Figure 1: Overview Map of the Blue Springs Area

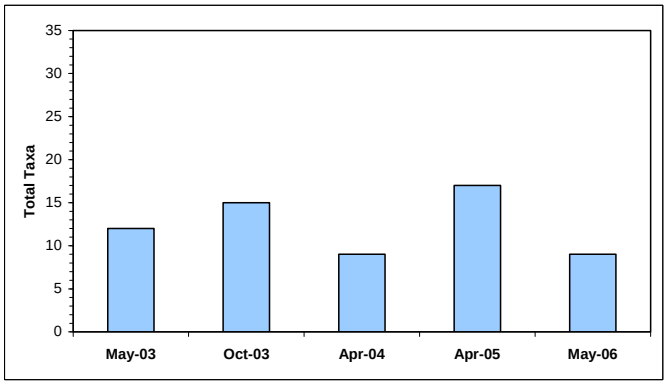


Figure 2: Data Table

VOLUSIA BLUE SPRINGS			
Sampling Date	5/24/2006	**Physical-Chemical Data**	
Macroinvertebrate Data		Habitat Assessment Score	119
SCI Score	14	Temperature (deg. C)	23.4
SCI Evaluation	Very Poor	pH	6.5
Chemistry Data		Dissolved Oxygen (mg/L)	4.61
Turbidity (NTU)	0.95 Q	Specific Conductance (umhos/cm)	1055
Color (PCU)	5 Q	**Bacteria Data**	
Ammonia (mg/L)	0.01 UQ	*Escherichia coli* (col/100 mL)	10 BQ
Nitrate-Nitrite (mg/L)	0.65	*Enterococci* (col/100 mL)	30 BQ
TKN (mg/L)	0.24 I	Fecal Coliforms (col/100 mL)	16 BQ
Total Phosphorus (mg/L)	0.069	Total Coliforms (col/100 mL)	64 Q

"I"=Below practical quantitation limit; "Q"=Outside of holding time; "U"=Below Minimum Detection Limit

Figure 3: Total Macroinvertebrate Taxa Over Time



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