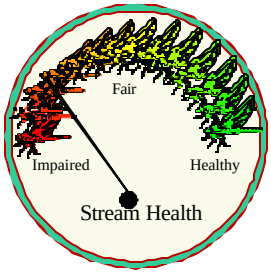


EcoSummary

Volusia Blue Spring
10/16/01 and 11/8/01



Background

Florida DEP's Division of Recreation and Parks selected Blue Spring, as well as springs from several other state parks, for biological and water quality monitoring. Data from these efforts will be used for documenting conditions within each 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 (0.64 mg/L) at the sampling site was equal to the value found in 90% of Florida streams (Figure 2). Elevated nitrite-nitrate levels at Blue Spring are related to nitrogen loading in the recharge basin. The Total Kjeldahl Nitrogen concentration was below the quantitation limit. The ammonia concentration was below detection limit (Figure 2). The total phosphorus concentration (0.069 mg/L) was relatively average for a Florida stream. The overall habitat assessment score (89) was in the low sub-optimal range. Lack of substrate availability and algal smothering of habitats were elements contributing to the low score. *Enterococci* and *Escherichia coli* concentrations complied with the EPA single-sample guideline values of 61 CFU/100mL and 235 CFU/100 mL, respectively, for "designated beach areas." Fecal and total coliform levels complied with Class III water quality standards. The periphyton community in Blue Springs was dominated by diatoms with some blue-green taxa. Based on species level data, the algal community present was indicative of nutrient enriched conditions. The stream condition index (SCI) score of 15 for Blue Spring was in the "poor" range.

In conclusion, elevated nitrate-nitrite levels, a eutrophic algal community, a poor SCI score (related to overall lack of useable habitat from algal smothering) were the issues of concern in Volusia Blue Springs.

Figure 1: Overview Map of the Volusia Blue Springs Area

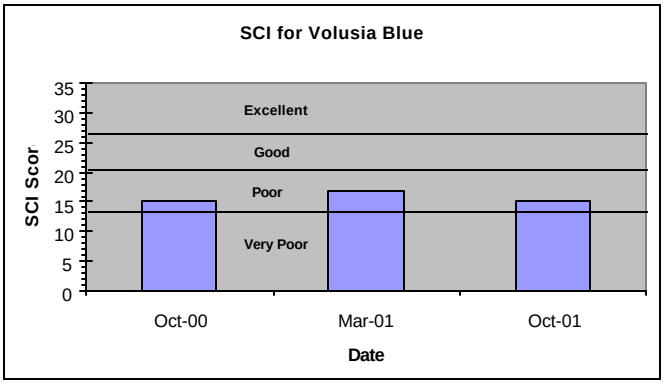


Figure 2: Data Table

Volusia Blue			
Sampling Date		10/16/01 &11/8/01	
Macroinvertebrate Parameters		Periphyton Parameters	
SCI	15	% Bacillariophyceae	74.17
SCI Evaluation	poor	% Cyanophyceae	25.25
Number of Taxa	18	% Chlorophyceae	0.58
EPT Index	1	Dominant taxon	Fragilariaceae
FL Index	0	Percent Dominant taxon	28.16
% Dominant Taxon	26.92	Physical-Chemical Data	
% Diptera	25.96	Habitat Assessment	89
Total number of Chironomidae	3	Specific Conductivity (umhos/cm)	1365
% Filter-Feeders	0	Dissolved Oxygen (mg/L)	1.5
Chemistry Data		pH (SU)	6.4
Ammonia (mg/L)	0.01 U	Temperature (deg C)	22.9
Nitrate-Nitrite (mg/L)	0.64	Bacteria Parameters	
TKN (mg/L)	0.14 I	*Enterococci* (col/100mL)	40 Q
Total Phosphorus (mg/L)	0.069 JQ	*Escherichia coli* (col/100mL)	8 O
Color (PCU)	5 U	Fecal Coliforms (col/100 mL)	2 Q
Turbidity (NTU)	0.1	Total Coliforms (col/100mL)	20 O

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

Figure 3. SCI Evaluation



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