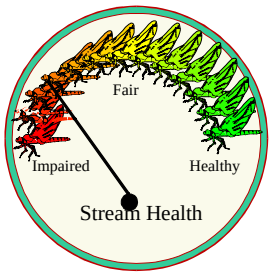


EcoSummary

Volusia Blue Spring

10/14/03



Background

Florida DEP's Division of Recreation and Parks selected Blue Spring, as well as springs from 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 (0.5 mg/L) at the sampling site was higher than the values found in 80% of Florida streams and was decreased from the May 2003 sampling (0.78 mg/L). Elevated nitrite-nitrate levels at Blue Spring are related to nitrogen loading in the recharge basin. The Total Kjeldahl nitrogen concentration (0.24 mg/L) was below the values found in 95% of Florida streams (Figure 2). The total phosphorus concentration (0.076mg/L) was relatively average for a Florida stream. The overall habitat assessment score (104) was in the sub-optimal range. Lack of substrate availability and diversity were elements contributing to the low score. *Enterococci* and *Escherichia coli* concentrations complied with the EPA single-sampling guideline values of 61 CFU/100mL and 235 CFU/100mL, respectively, for "designed beach area." 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. The particular taxa found were indicative of eutrophic conditions, which was not surprising given the continued nutrient enrichment in Blue Spring. The stream condition index (SCI) score of 11 for Blue Spring was in the "very poor" range.

In conclusion, elevated nitrate-nitrate levels, an algal community indicative of eutrophic conditions, and a poor invertebrate community were issues of concern in Volusia Blue Spring.

Figure 1: Overview Map of the Blue Springs Area

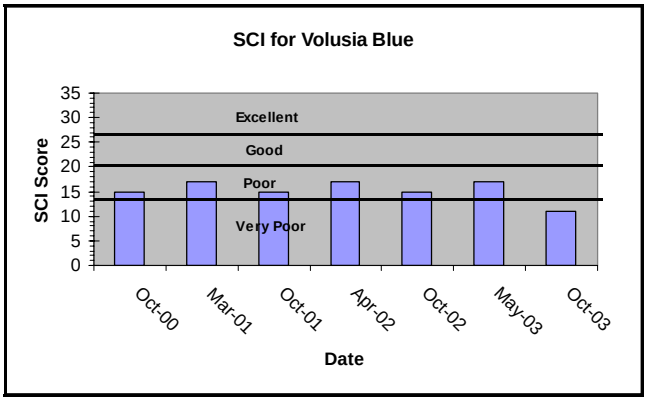


Figure 2: Data Table

Volusia Blue			
Sampling Date		10/14/2003	
Macroinvertibrate Parameters		Periphyton Parameters	
SCI	11	%Bacillariophyceae	57.3
SCI Evaluation	very poor	%Cyanophyceae	2.2
Number of Taxa	15	%Chlorophyceae	0
EPT Index	0	Dominant taxon	Diadesmis confervacea
FL Index	1	Percent Dominant taxon	19.4
%Dominant Taxon	69	Physical-Chemical Data	
%Diptera	4.3	Habitat Assessment	104
Total number of Chironomidae	1	Specific Conductivity (umhos/cm)	1396
%Filter-Feeders	0	Dissolved Oxygen (mg/L)	3.3
Chemistry Data		pH (SU)	7.3
Ammonia (mg/L)	0.01 U	Temperature (deg C)	23.1
Nitrate-Nitrite (mg/L)	0.5	Bacteria Parameters	
TKN (mg/L)	0.24	*Enterococci* (col/100mL)	10 BQ
Total Phosphorus (mg/L)	0.076	*Escherichia coli* (col/100mL)	2 BQ
Color (PCU)	5 UQ	Fecal Coliforms (col/100 mL)	2 BQ
Turbidity (NTU)	0.2 Q	Total Coliforms (col/100mL)	50 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. SCI Evaluation



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