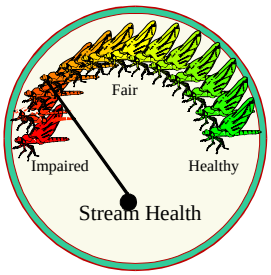


EcoSummary

Volusia Blue Spring

4/20/2004



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 (0.39 mg/L) at the sampling site was higher than the values found in 80% of Florida streams, but had decreased when compared to the October 2003 sampling (0.5 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 (0.098mg/L) was relatively average for a Florida stream.

The stream condition index (SCI) score of 11 for Blue Spring remained in the "very poor" range. The overall habitat assessment score (113) was in the sub-optimal range. Lack of substrate availability and diversity were elements contributing to the low habitat score. *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. The periphyton community in Blue Springs was dominated by diatoms with some blue-green taxa.

In conclusion, elevated nitrate-nitrate levels, and a poor invertebrate community were issues of concern in Volusia Blue Spring. The poor invertebrate community is likely linked to the absence of adequate habitat.

Figure 1: Overview Map of the Blue Springs Area

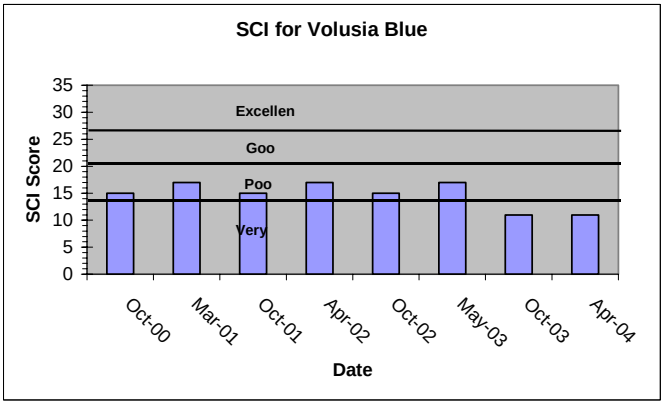


Figure 2: Data Table

Volusia Blue	
Sampling Date	4/20/2004
Macroinvertibrate Parameters	
SCI	11
SCI Evaluation	very poor
Number of Taxa	9
EPT Index	0
FL Index	2
% Dominant Taxon	29.5
% Diptera	6.7
Total number of Chironomidae	2
% Filter-Feeders	4.3
Chemistry Data	
Ammonia (mg/L)	0.041
Nitrate-Nitrite (mg/L)	0.39
TKN (mg/L)	0.2
Total Phosphorus (mg/L)	0.098
Color (PCU)	5 Q
Turbidity (NTU)	0.7 Q
Periphyton Parameters	
% Bacillariophyceae	92.3
% Cyanophyceae	7.0
% Chlorophyceae	0.6
Percent Dominant taxon	27.2
Physical-Chemical Data	
Habitat Assessment	113
Specific Conductivity (umhos/cm)	1705
Dissolved Oxygen (mg/L)	3.33
pH (SU)	7.5
Temperature (deg C)	23.4
Bacteria Parameters	
Enterococci (col/100mL)	40 Q
Escherichia coli (col/100mL)	23 BQ
Fecal Coliforms (col/100 mL)	8 BQ
Total Coliforms (col/100mL)	54 Q

"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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