EcoSummary

Manatee Springs

6/5/2003

Background

Florida DEP's Division of Recreation and Parks selected Manatee Springs, as well as springs from many other state parks and national forests, 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. Manatee Springs State Park is located in Levy County, Florida; see Figure 1. Manatee Springs is a Floridan Aquifer-dominated system, known for its recreational and aesthetic qualities.

Samples were collected from Manatee Springs on June 6, 2003, approximately 100 m below the headwaters. Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), total phosphorus, *Escherichia coli*, *Enterococci*, fecal coliform, and total coliform analyses; see Figure 2. Habitat assessment, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling were conducted. SCI scores over time are shown in Figure 3.

Results

The nitrate-nitrite concentration (1.7 mg/L) remained elevated, measuring higher than the values found in 95% of Florida streams (0.97 mg/L); see Figure 2. Elevated nitrate-nitrite levels in Manatee Springs Run are related to nitrogen loading in the recharge basin. TKN, ammonia, and total phosphorus levels remain low.

The total habitat assessment score (110) was in the sub-optimal range. *Enterococci* concentrations (730 CFU/100 mL) were well above the EPA single-sampling guideline value of 61 CFU/100mL for "designated beach areas." *Escherichia coli* concentrations (16 CFUl/100 mL) measured below the EPA single-sampling guideline value of 235 CFU/100 mL for "designated beach areas." Fecal and total coliform levels remained below the Class III water quality standard values. However, all bacteriological counts for *Enterococci*, *Escherichia coli*, fecal and total coliforms were analyzed beyond required holding times and routine methodological procedures, meaning the values reported are estimated counts. The SCI score of 17 for Manatee Springs has decreased slightly since the January 2003 sampling. This score has placed Manatee Springs back in the "poor" range. The periphyton community was dominated by diatoms, with some blue-green and green taxa.

In conclusion, nitrate-nitrite levels remain elevated for Manatee Springs. Furthermore, a eutrophic periphyton community continues to exist. The health of the macro-invertebrate community has decreased since the January 2003 sampling event.

Figure 1: Overview Map of the Manatee Springs Area

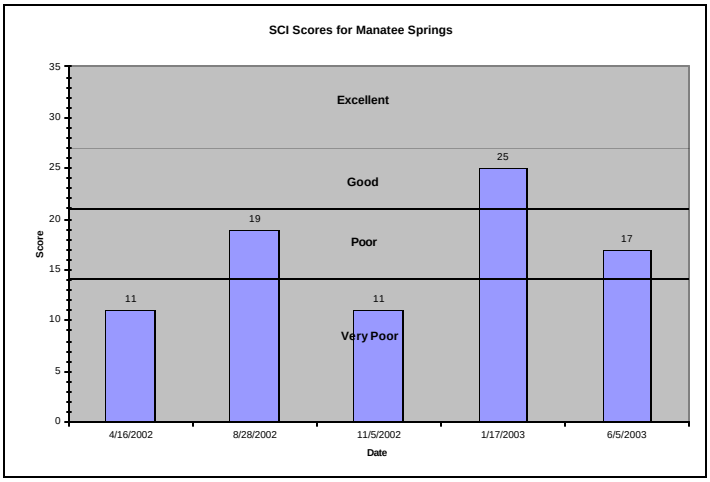


Figure 2: Data Table

Manatee Springs			
Sampling Date		6/5/2003	
Macroinvertibrate Parameters		**Periphyton Parameters**	
SCI	17	% Bacillariophyceae	82.95
SCI Evaluation	Poor	% Cyanophyceae	11.8
Number of Taxa	19	% Chlorophyceae	5.25
EPT Index	1	Dominant taxon	*Navicula minima*
FL Index	5	Percent Dominant taxon	19.02
% Dominant Taxon	29.09	**Physical-Chemical Data**	
% Diptera	31.82	Habitat Assessment	110
Total number of Chironomidae	10	Specific Conductivity (umhos/cm)	388
% Filter-Feeders	4.09	Dissolved Oxygen (mg/L)	2.93
Chemistry Data		pH (SU)	7.2
Ammonia (mg/L)	0.01 U	Temperature (deg C)	22.7
Nitrate-Nitrite (mg/L)	1.7	**Bacteria Parameters**	
TKN (mg/L)	0.13 I	*Enterococci* (col/100mL)	730 BO
Total Phosphorus (mg/L)	0.037 I	*Escherichia coli* (col/100mL)	16 BQ
Color (PCU)	5 U	Fecal Coliforms (col/100 mL)	128 BQ
Turbidity	0.65	Total Coliforms (col/100mL)	170 BQ

"U"- Below Detection Limit; "I"- Below Quantitation Limit; "Q"- Beyond Holding Time; "B"- Counts Outside Acceptable Range, Estimated Count

Figure 3: SCI Scores



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