EcoSummary

Manatee Springs

8/28/2002

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 August 28, 2002, 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) remains 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 continue to be low.

The total habitat assessment score (119) was in the high end of the sub-optimal range, with a few parameters receiving marginal scores. However, the percent available habitat coverage has increased slightly from less than 5% in April 2002 to 6-15% in August 2002. *Enterococci* and *Escherichia coli* concentrations were well below the EPA single-sampling guideline value 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 SCI score of 19 for Manatee Springs was in the "poor" range, but this score was slightly higher than the April 2002 SCI score of 11 ("very poor"). The increase in the available habitat may in part contribute to the SCI increase. 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 poor-quality macroinvertebrate community, a eutrophic periphyton community, and overall lack of habitat for invertebrates remain the parameters of concern in Manatee Springs.

Figure 1: Overview Map of the Manatee Springs Area

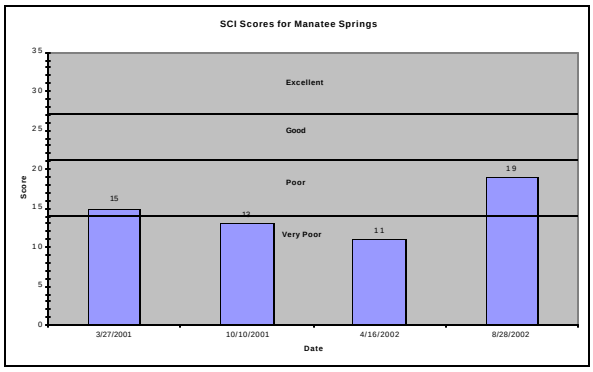


Figure 2: Data Table

Manatee Springs			
Sampling Date		8/28/2002	
Macroinvertibrate Parameters		**Periphyton Parameters**	
SCI	19	% Bacillariophyceae	76.48
SCI Evaluation	Poor	% Cyanophyceae	21.55
Number of Taxa	22	% Chlorophyceae	1.97
EPT Index	1	Dominant taxon	*Diatomaceae/Fragilariaceae*
FL Index	4	Percent Dominant taxon	40.85
% Dominant Taxon	46.73	**Physical-Chemical Data**	
% Diptera	18.69	Habitat Assessment	119
Total number of Chironomidae	9	Specific Conductivity (umhos/cm)	432
% Filter-Feeders	6.54	Dissolved Oxygen (mg/L)	2.83
Chemistry Data		pH (SU)	7.26
Ammonia (mg/L)	0.012 I	Temperature (deg C)	22.5
Nitrate-Nitrite (mg/L)	1.7	**Bacteria Parameters**	
TKN (mg/L)	0.06 U	*Enterococci* (col/100mL)	11 AQ
Total Phosphorus (mg/L)	0.028 I	*Escherichia coli* (col/100mL)	16 AQ
Color (PCU)	5 U	Fecal Coliforms (col/100 mL)	9 AQ
Turbidity	0.1	Total Coliforms (col/100mL)	20 AQ

"U"- Below Detection Limit; "I"- Below Quantitation Limit; "Q"- Beyond Holding Time; "A"- Mean of Two of More Determinations

Figure 3: SCI Scores



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