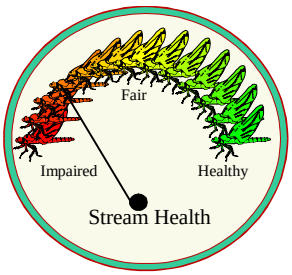


EcoSummary

Manatee Springs

1/29/2004



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 January 29, 2004, 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.

Figure 1: Overview Map of the Manatee Springs Area



Results

The nitrate-nitrite concentration (1.8 mg/L) in Manatee Springs remained elevated, measuring higher than the values found in 95% of Florida streams; see Figure 2. Elevated nitrate-nitrite levels in Manatee Springs Run are related to nitrogen loading in the recharge basin. The ammonia concentration was below detection limits. TKN and total phosphorus levels were below practical quantitation limits.

The total habitat assessment score (113) for Manatee Springs was in the sub-optimal range. The *Enterococci* and *Escherichia coli* levels were below the EPA designated beach area single-sampling guideline values of 61 CFU/100 mL and 235 CFU/100 mL, respectively. Fecal and total coliform levels complied with Class III water quality standards.

The stream condition index (SCI) measures factors that affect the health and diversity of the benthic macroinvertebrate community. The SCI score of 17 for Manatee Springs was in the "poor" range. SCI scores for Manatee Springs over time are given in Figure 3. The habitat parameters of concern were substrate diversity, substrate availability, and habitat smothering. The periphyton community was dominated by diatoms, with some blue-green and green algal taxa.

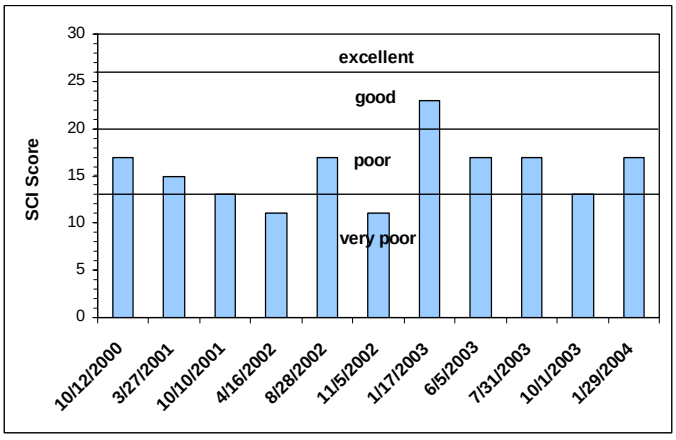
In conclusion, nitrate-nitrite levels remained elevated in Manatee Springs. Macroinvertebrate community health continued to be in poor condition, probably related to habitat factors. Substrate diversity, substrate availability, and habitat smothering were the elements limiting habitat quality for the macroinvertebrate community.

Figure 2: Data Table

MANATEE SPRINGS			
Sampling Date		1/29/2004	
Macroinvertebrate Data		**Periphyton Data**	
SCI Score	17	% Bacillariophyta	90.68
SCI Evaluation	Poor	% Cyanophycophyta	8.04
Number of Taxa	19	% Chlorophycota	0.64
EPT Index	1	Dominant Taxon	Fragilariaceae
Florida Index	7	% Dominant Taxon	21.54
% Dominant Taxon	53.92	**Habitat Assessment**	
% Diptera	18.63	Habitat Assessment Score	113
Number of Chironomidae	8	**Chemistry Data**	
% Filter-Feeders	3.92	Turbidity (NTU)	0.35
Bacteria Data		Color (PCU)	5 U
Escherichia coli (col/100 mL)	2 B,Q	Ammonia (mg/L)	0.01 U
Enterococci (col/100 mL)	1 K,Q	Nitrate-Nitrite (mg/L)	1.8
Fecal Coliforms (col/100 mL)	60 Q	TKN (mg/L)	0.069 I
Total Coliforms (col/100 mL)	100 B,Q	Total Phosphorus (mg/L)	0.035 I

"U"=Below detection limit; "I"=Below practical quantitation limit; "Q"=Outside of holding time; "B"=Results based on colony counts outside the acceptable range; "K"=Actual value is known to be less than the value given

Figure 3: Stream Condition Index Scores Over Time



FDEP Bureau Of Laboratories

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