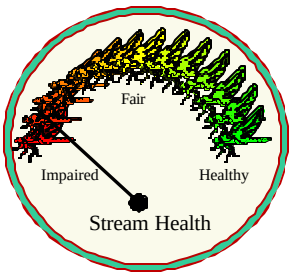


EcoSummary

Manatee Springs

10/10/2001



Background

Florida DEP's Division of Recreation and Parks selected Manatee Springs, as well as springs from many 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. Manatee Springs State Park is located in Levy County, Florida (see Figure 1). Manatee Springs Run emanates from a first magnitude spring vent and flows west for approximately 400 m to the Suwannee River. Samples were collected from Manatee Springs on October 10, 2001. Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), total phosphorus, *Escherichia coli*, *Enterococci*, fecal coliform, and total coliform analyses (Figure 2). Habitat assessment, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling was also conducted. SCI temporal trends are shown in Figure 3.

Figure 1: Overview Map of the Manatee Springs Area



Results

The nitrate-nitrite concentration (1.9 mg/L) was higher than the values found in 95% of Florida streams (Figure 2). Elevated nitrate-nitrite levels in Manatee Springs Run are related to nitrogen loading in the recharge basin. Ammonia and TKN concentrations were both below detection limits. Total phosphorus (0.033 mg/L) was below the laboratories quantitation limit.

The habitat assessment score (86) was near the low end of the sub-optimal range, with many parameters receiving poor scores, including the substrate availability. Percent available habitat coverage decreased from greater than 30% in October 2000, to 15% in March 2001, to less than 5% in October 2001.

Enterococci and *Escherichia coli* concentrations complied with the EPA single-sample 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 standard values. The SCI score of 13 for Manatee Springs was in the "very poor" range, representing a substantial decrease from October 2000. Note that the SCI scores have been decreasing over the sampling period (Figure 3). Anecdotal evidence suggests manatee grazing was a main cause for the decrease in submerged aquatic vegetation, although the remaining habitat tended to be smothered by algal mats. Based on species level data, the algal community present was indicative of nutrient enriched conditions.

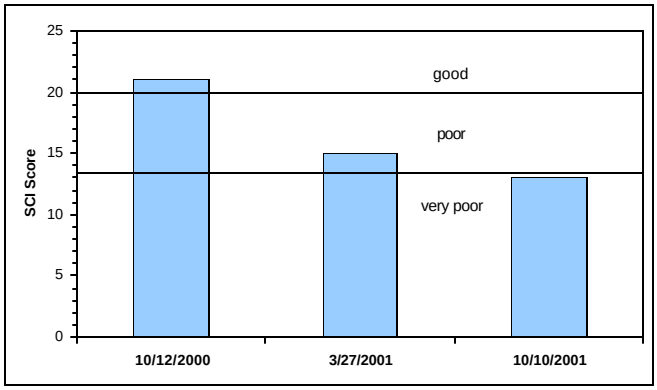
In conclusion, elevated nitrate-nitrite levels, a eutrophic algal community, a very poor SCI score (probably related to overall lack of useable habitat) were the issues of concern in Manatee Springs.

Figure 2: Data Table

MANATEE SPRINGS			
Sampling Date		10/10/2001	
Macroinvertebrate Data		**Periphyton Data**	
SCI Score	13	% Bacillariophyceae	83.31
SCI Evaluation	very poor	% Cyanophyceae	14.71
Number of Taxa	19	% Chlorophyceae	1.98
EPT Index	1	Dominant Taxon	*Fragilariaceae*
Florida Index	6	% Dominant Taxon	70.58
% Dominant Taxon	48.54	**Physical-Chemical Data**	
% Diptera	8.74	Total Habitat Assessment Score	86
Total Numberof Chironomidae	4	Temperature (deg. C)	22.4
% Filter-Feeders	0.49	pH	7.01
Chemistry Data		Dissolved Oxygen (mg/L)	1.4
Turbidity (NTU)	0.3	Specific Conductance (umhos/cm2)	534
Color (PCU)	5 U	**Bacteria Data**	
Ammonia (mg/L)	0.01 U	*Escherichia Coli* (col/100 mL)	16 Q
Nitrate-Nitrite (mg/L)	1.9 J	*Enterococci* (col/100 mL)	44 Q
TKN (mg/L)	0.06 U	Fecal Coliforms (col/100 mL)	20 Q
Total Phosphorus (mg/L)	0.033 I	Total Coliforms (col/100 mL)	100 Q

"U"=Below detection limit; "I"=Below practical quantitation limit; "J"=Estimated value; "Q"=Outside holding time

Figure 3: SCI Scores Over Time



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