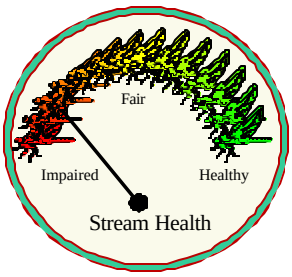
EcoSummary

Manatee Springs
March 2001



Background

Florida DEP's Division of Recreation and Parks selected Manatee Springs, as well as springs from eight 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. The Manatee Springs Run begins from numerous spring vents and then flows west into the Suwannee River. Manatee Springs is a Floridan Aquifer-dominated system and is known for its recreational and aesthetic qualities. Water quality characteristics vary from spring vent to spring vent, so a sampling location in the spring run was selected to document overall effects.

Samples were taken at six of the park locations in March 2001. Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen, total phosphorus, ortho-phosphate, other chemical parameters, *Enterococci*, *Escherichia coli*, fecal coliform, and total coliform analyses; see Figures 2 and 3. Habitat assessment, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling were conducted.

Results

Nitrate-nitrite concentration (1.53-1.54 mg/L) at the sampling site was higher than those found in 95% of Florida streams (1.05 mg/L); see Figure 2. Elevated nitrate-nitrite levels in Manatee Springs River are related to nitrogen loading in the recharge basin (mostly inorganic fertilizers applied to pasture). Ammonia concentration was below detection limit (see Figure 2). TKN concentration (11.4-17.8 mg/L) was well in excess of the level found in 95% of Florida streams (2.8 mg/L). TP (0.046 mg/L) and ortho-phosphate (0.028 mg/L) concentrations were both lower than those found in 80% of Florida streams.

The overall habitat assessment score (111) was in the sub-optimal range, with substrate availability receiving a marginal score and the riparian buffer zone width on the right bank receiving a poor score. *Enterococci* concentration was well below the EPA single-sampling guideline value of 61 col/100mL for "designated beach areas." *Escherichia coli* concentration was well below the EPA designated beach guideline of 235 col/100 mL. Fecal and total coliform levels were below the Class III water quality standard values. The stream condition index (SCI) score of 15 for Manatee Springs was in the "poor" range. The periphyton community was dominated by diatoms, with some blue-green and green taxa. The particular taxa found were indicative of eutrophic conditions, which was not surprising given the nutrient enrichment in Manatee Springs.

In conclusion, elevated nitrate-nitrite levels, macroinvertebrate and periphyton communities, and habitat availability were the parameters of concern in Manatee Springs.

Figure 1: Overview Map of the Manatee Springs Area

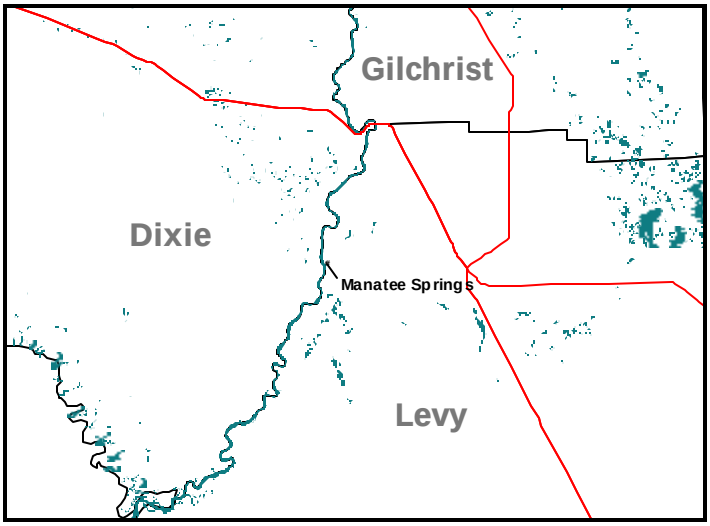


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Figure 2: Chemistry Data Table

Station	Manatee Springs	
Station Nick Name	MANATEE	
STORET	SPRINGS003	
Chemistry Data		
Station	Manatee Springs	Manatee Springs - Chem Dup
Sampling Date	3/15/2001	3/15/2001
Ammonia (mg/L)	0.02 U	0.02 U
Nitrate-Nitrite (mg/L)	1.53	1.54
TKN (mg/L)	11.4	17.8
Total Phosphorus (mg/L)	0.046	0.046
Ortho-Phosphate (mg/L)	0.028	0.028
Sulfate (mg/L)	30.5	32.5
Chloride (mg/L)	8.4	7.7 J
Alkalinity (mg CaCO3/L)	193	192
TOC (mg/L)	10.02	3.8
Color (PCU)	5 U	5 U
TDS (mg/L)	280	272
Turbidity (NTU)	0.9	0.9
Physical-Chemical Data for Chemistry		
Sampling Date	3/15/2001	
Sample Depth (m)	1	
Secchi Depth (m)	2 L	
Specific Conductance (umho/cm)	439	
Dissolved Oxygen (mg/L)	1.41	
pH (SU)	7.07	
Temperature (deg. C)	22.2	

"U"=Below detection limit; "J"=Estimated value; "L"=Actual value is > value given

Figure 3: Biology Data Table

Station	Manatee Springs
Station Nick Name	MANATEE
STORET	SPRINGS003
Macroinvertebrate Parameters	
Sampling Date	3/27/2001
SCI	15
SCI Evaluation	poor
SCI Region	peninsula
Number of Taxa	23
Number of Ephemeroptera	1
Number of Plecoptera	0
Number of Trichoptera	0
EPT Index	1
% Dominant Taxon	54.49
Florida Index	4
% Diptera	8.98
Number of Chironomidae	1
Number of Orthocladiinae	6
Total Number of Chironomidae	7
% Filter-Feeders	2.99
Periphyton Parameters	
Sampling Date	3/27/2001
Number of Taxa	35
% Bacillariophyceae	86.28
% Chlorophyceae	1.89
% Cyanophyceae	11.84
% Euglenophyceae	0
% Dominant Taxon	13.55
Bacteria Parameters	
Sampling Date	3/27/2001
Enterococci (col/100 mL)	2
Escherichia coli (col/100 mL)	1 K
Fecal Coliforms (col/100 mL)	4
Total Coliforms (col/100 mL)	30
Physical-Chemical Data for Biology	
Sampling Date	3/27/2001
Habitat Assessment	111
Sample Depth (m)	0.5
Specific Conductance (umho/cm)	457
Dissolved Oxygen (mg/L)	2.4
pH (SU)	7.3
Temperature (deg. C)	22.4

"K"=Actual value is < value given

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