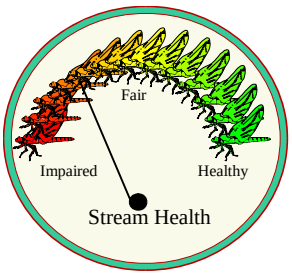


EcoSummary

Manatee Springs
1/25/2006



Background

Florida DEP's Division of Recreation and Parks selected Manatee Springs for biological and water quality monitoring. Data from these efforts will be used for documenting conditions within the park and for making resource protection decisions. Manatee Springs, a Floridan Aquifer-dominated system, known for its recreational and aesthetic qualities, is located in Levy County, Florida; see Figure 1.

Samples were collected from Manatee Springs on January 25, 2006, approximately 100 m below the headwaters. Water chemistry samples were collected for ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), total phosphorus, *Escherichia coli*, *Enterococci*, fecal coliform, and total coliform analyses; see Figure 2. Habitat assessment and benthic macroinvertebrate stream condition index (SCI) sampling were conducted.

Figure 1: Overview Map of the Manatee Springs Area



Results

The nitrate-nitrite concentration (2.0 mg/L) remained extremely 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. The total phosphorus concentration (0.028 mg/L) was less than the practical quantitation limit. Ammonia and TKN values were below detection limit.

The total habitat assessment score (114) for Manatee Springs was in the "suboptimal" range. Habitat parameters of concern were substrate availability and habitat smothering. *Enterococci* and *Escherichia coli* concentrations were below the EPA single-sample guideline values of 61 CFU/100 mL and 235 CFU/100 mL, respectively, for "designated beach areas." Fecal and total coliform levels complied with Class III water quality standards.

The SCI was recently recalibrated in order to make it a more effective tool for evaluating ecological health of streams. The sampling method remained the same; only the index calculation was changed. The recalibrated SCI tends to produce a more stringent evaluation, since two poorly performing metrics from the old SCI were discarded (% Diptera and number of chironomid taxa). Five additional metrics correlated with human disturbance were added, for a new total of ten metrics. The ten metrics are: total taxa, Ephemeroptera taxa, Trichoptera taxa, percent filterers, long-lived taxa, clinger taxa, percent dominance, percent Tanytarsini, sensitive taxa, and percent very tolerant taxa. More details can be found in the FDEP Standard Operating Procedures, LT 7200. The recalibrated SCI went into effect June 8, 2004, when the FDEP Quality Assurance Rule was finalized. SCI samples collected after that time may yield different results from prior evaluations.

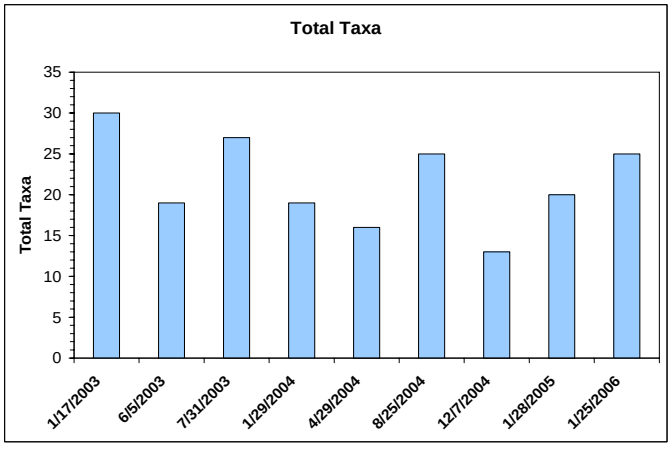
The SCI score for Manatee Springs (29, in the "poor" range) was somewhat higher than the previous sampling (17, "very poor"). Invertebrate taxa richness does not appear to have significantly changed over the past two years; see Figure 3. In conclusion, elevated nitrate-nitrite levels, lack of habitat availability (due to both manatee grazing and algal smothering), and poor macroinvertebrate community health continue to be parameters of concern in Manatee Springs.

Figure 2: Data Table

MANATEE SPRINGS			
Sampling Date	1/25/2006	**Physical-Chemical Data**	
Macroinvertebrate Data		Habitat Assessment Score	114
SCI Score	29	Temperature (deg. C)	NA
SCI Evaluation	poor	pH	NA
Chemistry Data		Dissolved Oxygen (mg/L)	NA
Turbidity (NTU)	0.25	Specific Conductance (umhos/cm)	NA
Color (PCU)	5	**Bacteria Data**	
Ammonia (mg/L)	0.01 U	*Escherichia coli* (col/100 mL)	2 B
Nitrate-Nitrite (mg/L)	2.0	*Enterococci* (col/100 mL)	32 B
TKN (mg/L)	0.08 U	Fecal Coliforms (col/100 mL)	6 B
Total Phosphorus (mg/L)	0.028 I	Total Coliforms (col/100 mL)	68

"U"=Below detection limit; "I"=Below practical quantitation limit; *"B"=Results based on colony counts outside the acceptable range*

Figure 3: Total Number of Macroinvertebrate Taxa Over Time



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