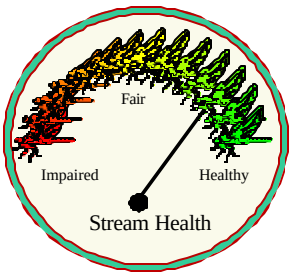


EcoSummary

Rainbow Springs
3/22/01



Background

Florida DEP's Division of Recreation and Parks selected Rainbow Springs, as well as springs from seven 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. Rainbow Springs State Park is located in Marion County, Florida; see Figure 1. The Rainbow Springs River begins in the park from numerous spring vents and then flows south into the Withlacoochee River. Rainbow 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.

Baseline samples were taken at all eight park locations in March 2001. Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen, total phosphorus, color, turbidity, *Enterococci*, *Escherichia coli*, fecal coliform, and total coliform analysis; see Figure 2. Habitat assessment, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling were conducted.

Results

Nitrate-nitrite concentrations (0.89 mg/L) at the sampling site were higher than those found in 90% of Florida streams (0.64 mg/L); see Figure 2. Elevated nitrite-nitrate levels in Rainbow Springs River are related to nitrogen loading in the recharge basin (mostly inorganic fertilizers applied to pasture). Ammonia and total phosphorus concentration were below quantitation limit (see figure 2). Kjeldahl nitrogen (0.11 mg/L) was near background levels The overall habitat assessment score (139) was in the optimal range (>120), with only the riparian buffer zone width on the left bank receiving a marginal score. Microbiology for *Enterococci*, *E. Coli*, fecal and total coliforms were below EPA guidance concentrations and the Class III water body thresholds for the state. The stream condition index (SCI) score of 29 for Rainbow Springs was in the "excellent" range. The periphyton community in Rainbow Springs was dominated by diatoms with some blue-green taxa. The particular taxa found were indicative of eutrophic conditions, which was not surprising given the nutrient enrichment in Rainbow Springs. In conclusion, elevated nitrate-nitrate levels in Rainbow Springs appeared to be the main stressor associated with a relatively low quality algal community.

Figure 1: Overview Map of the Rainbow Springs Area

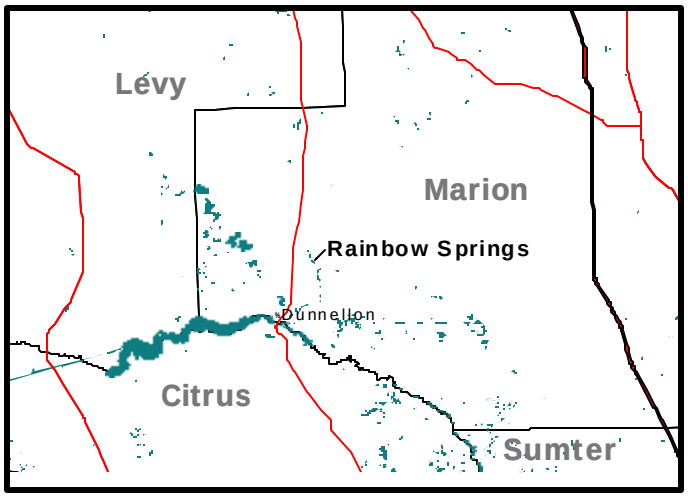


Figure 2: Data Table

RAINBOW SPRINGS			
Station		Rainbow Springs	
Sampling Date		3/22/01	
Macroinvertebrate Parameters		**Periphyton Parameters**	
SCI	27	Number of Taxa	29
SCI Evaluation	excellent	% Bacillariophyceae	93.81
SCI Region	peninsula	% Chlorophyceae	0.64
Number of Taxa	28	% Cyanophyceae	5.56
Number of Ephemeroptera	1	% Dinophyceae	0
Number of Plecoptera	0	% Dominant Taxon	24.86
Number of Trichoptera	1	**Physical-Chemical Data**	
EPT Index	2	Habitat Assessment	139
% Dominant Taxon	25.98	Sample Depth (m)	0.3
Florida Index	9	Specific Conductivity (umho/cm)	208
% Diptera	69.29	Dissolved Oxygen (mg/L)	7.9
Number of Chironomidae	1	pH (SU)	7.9
Number of Orthocladiinae	8	Temperature (deg. C)	22.5
Total Number of Chironomidae	9	**Chemistry Data**	
% Filter-Feeders	28.35	Ammonia (mg/L)	BDL
Bacteria Parameters		Nitrate-Nitrite (mg/L)	0.89
Enterococci (col/100 mL)	20 Q	TKN (mg/L)	0.11 Q
Escherichia coli (col/100 mL)	14 Q	Total Phosphorus (mg/L)	0.043
Fecal Coliforms (col/100 mL)	34 Q	Color (PCU)	BDL
Total Coliforms (col/100 mL)	90 Q	Turbidity (NTU)	BDL

"BDL"- Below Detection Limit; "Q"- Information Only

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