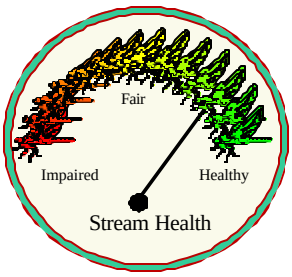


EcoSummary

Rainbow Springs
10/04/00



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 October 2000. 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 (1.1 mg/L) at the sampling site were higher than those found in 95% of Florida streams (1.05 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, total Kjeldahl nitrogen, and total phosphorus concentration were below quantitation limit (see figure 2). The overall habitat assessment score (140) was in the optimal range (>120), with only the riparian buffer zone width on the left bank receiving a marginal score. *Enterococci* concentration was slightly above the EPA single-sampling guideline values of 89 col/100mL for "moderately used full body contact recreation areas." *Escherichia coli* concentration was below the EPA moderate use guideline. Fecal and total coliform levels were below the Class III water body threshold values. 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

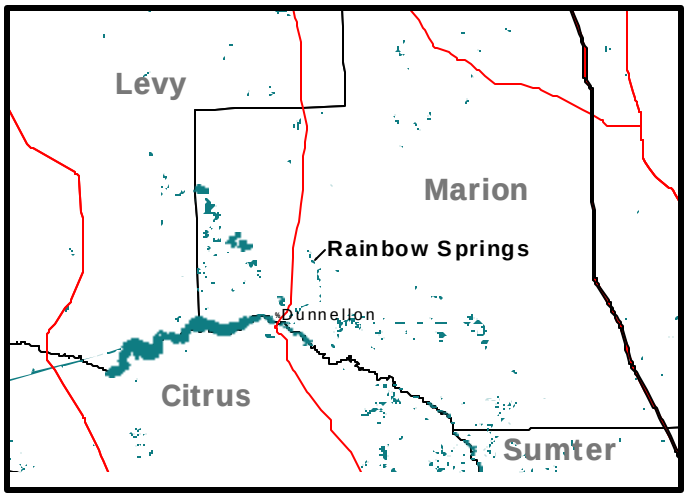


Figure 2: Data Table

RAINBOW SPRINGS			
Station		Rainbow Springs	
Station Nick Name		RAINBOWREF	
STORET		23010409	
Sampling Date		10/4/00	
Macroinvertebrate Parameters		**Periphyton Parameters**	
SCI	29	Number of Taxa	22
SCI Evaluation	excellent	% Bacillariophyceae	85.32
SCI Region	peninsula	% Chlorophyceae	0.17
Number of Taxa	33	% Cyanophyceae	14.51
Number of Ephemeroptera	5	% Dinophyceae	0
Number of Plecoptera	0	% Dominant Taxon	42.32
Number of Trichoptera	1	**Physical-Chemical Data**	
EPT Index	6	Habitat Assessment	140
% Dominant Taxon	25.86	Sample Depth (m)	0.1
Florida Index	13	Specific Conductivity (umho/cm)	no data
% Diptera	25	Dissolved Oxygen (mg/L)	no data
Number of Chironomidae	5	pH (SU)	no data
Number of Orthocladiinae	8	Temperature (deg. C)	no data
Total Number of Chironomidae	13	**Chemistry Data**	
% Filter-Feeders	7.76	Ammonia (mg/L)	0.01 U
Bacteria Parameters		Nitrate-Nitrite (mg/L)	1.1
Enterococci (col/100 mL)	92 Q	TKN (mg/L)	0.06 U
Escherichia coli (col/100 mL)	2 O	Total Phosphorus (mg/L)	0.036 I
Fecal Coliforms (col/100 mL)	4 Q	Color (PCU)	20 Q
Total Coliforms (col/100 mL)	60 Q	Turbidity (NTU)	0.1 Q

"U"- Below Detection Limit; "I"- Below Quantitation Limit; "Q"- Information Only

FOR MORE INFORMATION, CONTACT:
Amy Bennett, FDEP Environmental Assessment Section
2600 Blair Stone Road MS#6511 Tallahassee, FL 32399-2400 (850) 921-9730 Amy.Bennett@dep.state.fl.us