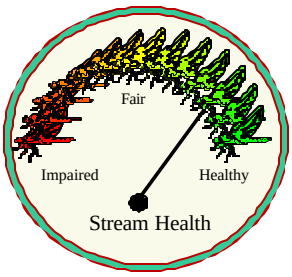


EcoSummary

Blue Hole Spring

10/4/2001

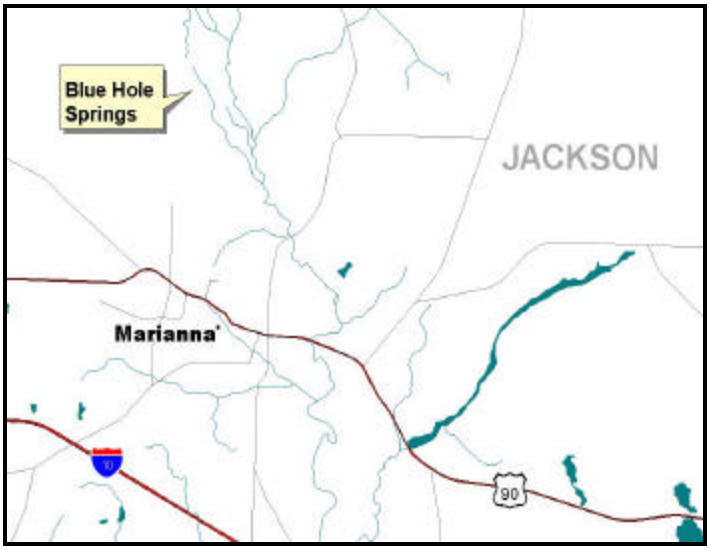


Background

The Florida Department of Environmental Protection's Division of Recreation and Parks selected springs from many 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. Blue Hole Springs is located in Florida Caverns State Park in Jackson County (Figure 1). Blue Hole Springs Run, which was added to this monitoring program in October 2001, flows into the Chipola River.

Samples were collected from Blue Hole Springs on October 4, 2001. Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), total phosphorus, other chemical parameters, *Escherichia coli*, *Enterococci*, fecal coliform, and total coliform analyses; see Figure 2. Habitat assessment, qualitative periphyton sampling, and benthic macroinvertebrate stream condition index (SCI) sampling were conducted.

Figure 1: Overview Map of the Blue Hole Springs Area



Results

The nitrate-nitrite concentration (0.41 mg/L) in Blue Hole Springs was higher than the values found in 80% of Florida streams (Figure 2). This nitrate value, although elevated for surface waters and problematic due to potential eutrophication effects, is lower than those found many Florida springs. Ammonia and total phosphorus concentrations were both below the practical quantitation limits. TKN concentration was below the detection limit.

The overall habitat assessment score (105) was in the sub-optimal range, with substrate diversity receiving a marginal score and water velocity and habitat smothering receiving poor scores. *Enterococci* and *Escherichia coli* concentrations complied with the EPA single-sample guideline values 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 standards.

The stream condition index (SCI) score of 27 for Blue Hole Springs was in the "excellent" range. The periphyton community was dominated by diatoms, with some blue-green and green taxa. Based on species level data, the algal community present was indicative of nutrient enriched conditions.

In conclusion, elevated nitrate-nitrite levels and a eutrophic algal community were issues of concern in Blue Hole Springs. Despite the presence of slightly sub-optimal habitat, the stream condition index indicated an overall healthy ecosystem.

Figure 2: Data Table

BLUE HOLE SPRINGS			
Sampling Date		10/4/2001	
Macroinvertebrate Data		**Periphyton Data**	
SCI Score	27	% Bacillariophyceae	89.12
SCI Evaluation	excellent	% Cyanophyceae	7.74
Number of Taxa	25	% Chlorophyceae	3.14
EPT Index	5	Dominant Taxon	*Cocconeis placentula*
Florida Index	9	% Dominant Taxon	54.81
% Dominant Taxon	22.42	**Physical-Chemical Data**	
% Diptera	34.55	Total Habitat Assessment Score	105
Total Numberof Chironomidae	9	Temperature (deg. C)	21.9
% Filter-Feeders	26.06	pH	7.17
Chemistry Data		Dissolved Oxygen (mg/L)	9.7
Turbidity (NTU)	1	Specific Conductance (umhos/cm2)	264
Color (PCU)	5 U	**Bacteria Data**	
Ammonia (mg/L)	0.013 I	*Escherichia Coli* (col/100 mL)	6 Q
Nitrate-Nitrite (mg/L)	0.41	*Enterococci* (col/100 mL)	2 Q
TKN (mg/L)	0.06 U	Fecal Coliforms (col/100 mL)	2 Q
Total Phosphorus (mg/L)	0.02 I	Total Coliforms (col/100 mL)	150 Q

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

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