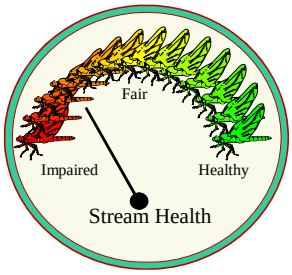


EcoSummary

Blue Hole Springs

6/22/2006

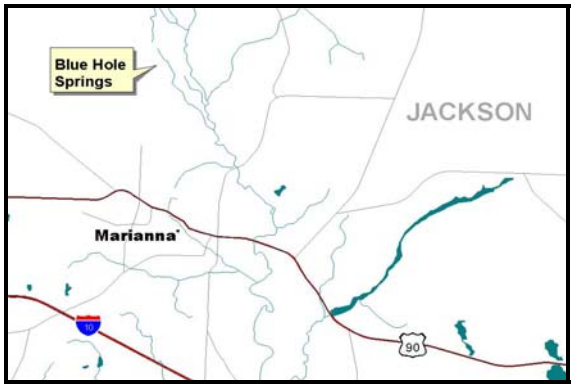


Background

The Florida Department of Environmental Protection's Division of Recreation and Parks selected Blue Hole Springs along with many other springs from 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; see Figure 1. Blue Hole Springs Run flows into the Chipola River.

Samples were collected from Blue Hole Springs on June 22, 2006. Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), total phosphorus, 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 (0.42 mg/L) in Blue Hole Springs was higher than the values found in 80% of Florida streams (0.35 mg/L or lower); see Figure 2. The total phosphorus level was below the practical quantitation limit. The ammonia concentration (0.022 mg/L) was lower than the 20th percentile distribution of Florida waters (0.04 mg/L). TKN concentrations were below detection limits.

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 total habitat assessment score (111) was near the lower end of the "optimal" range, however, habitat smothering was of concern.

Enterococci and Escherichia coli concentrations complied with 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.

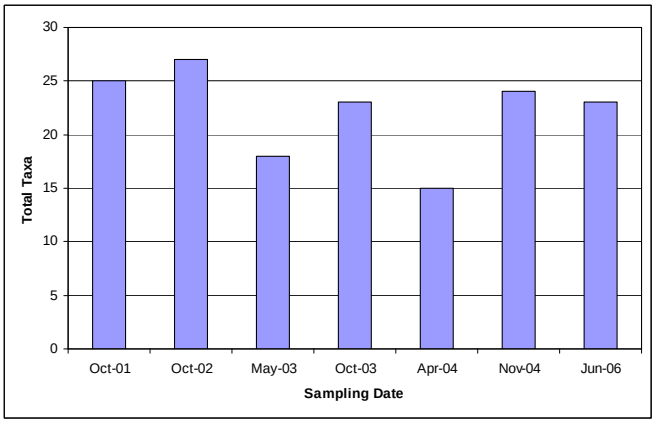
The stream condition index (SCI) score of 36 for Blue Hole Springs was in the "poor" range. The periphyton community was dominated by diatoms, with some blue-green and green algal taxa. In conclusion, nitrate-nitrite and smothering of macroinvertebrate habitats were the parameters of concern in Blue Hole Springs.

Figure 2: Data Table

BLUE HOLE SPRINGS			
Sampling Date	6/22/2006	**Physical-Chemical Data**	
Macroinvertebrate Data		Habitat Assessment Score	111
SCI Score	36	Temperature (deg. C)	20
SCI Evaluation	Poor	pH	6.8
Chemistry Data		Dissolved Oxygen (mg/L)	6.9
Turbidity (NTU)	4.6	Specific Conductance (umhos/cm)	300
Color (PCU)	10	**Bacteria Data**	
Ammonia (mg/L)	0.022	*Escherichia coli* (col/100 mL)	16 B,Q
Nitrate-Nitrite (mg/L)	0.42	*Enterococci* (col/100 mL)	46 Q
TKN (mg/L)	0.08 U	Fecal Coliforms (col/100 mL)	10 B,Q
Total Phosphorus (mg/L)	0.037 I	Total Coliforms (col/100 mL)	70 Q

"U"=Below detection limit; "I"=Below practical quantitation limit; "Q"=Outside of holding time; "B"=Results based on colony counts outside the acceptable range

Figure 3: Total Taxa Scores Over Time



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