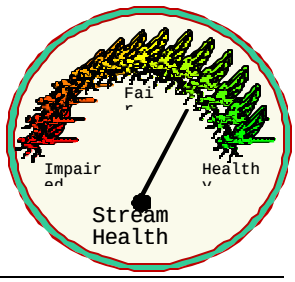


EcoSummary

Ichetucknee Springs
3/14/2001



Background

Florida DEP's Division of Recreation and Parks selected Ichetucknee Springs, as well as springs in sevearl 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. Ichetucknee Springs State Park is located in Suwannee and Columbia Counties, Florida (see Figure 1). The Ichetucknee River begins in the park from numerous spring vents and flows south into the Santa Fe River. Ichetucknee 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.

During March, 2001, duplicate samples were collected for water quality and biology as part of routine quality assurance checks. Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), total phosphorus, ortho-phosphate, color, turbidity, *Enterococci*, *Eschericia coli*, fecal coliform, and total coliform analysis; see Figure 2. Habitat assessment, qualitative periphyton sampling, and benthic macroinvertebrate stream condition index (SCI) sampling were conducted.

Results

Nitrate-nitrite concentrations (0.63 mg/L and 0.74 mg/L) were higher than those found in 90% of other Florida streams (see Figure 2). A trend toward increased nitrate-nitrite levels in springs is generally associated with nutrient enrichment (*e.g.*, fertilizer application) in recharge areas. Ammonia and TKN concentrations were relatively low. Total phosphorus values (0.057 mg/L) were lower than concentrations typically found in 50% of other Florida streams. The overall habitat assessment score (149) was in the optimal range (>120). The SCI scores determined from duplicate sampling (33 and 31) for the Ichetucknee River were both in the "excellent" range. Nutrient tolerant diatoms with some blue-green algal taxa continued to dominate the periphyton community in Ichetucknee Springs.

The *Enterococci* concentrations (180 and 240 CFU/100 mL) were above the EPA single-sampling recommended guideline of 61 CFU/100 mL for "designated beach areas." The *Escherichia coli* concentrations (76 and 58 CFU/100 mL) were below the EPA "designated beach" guideline of 235 CFU/100 mL. Fecal and total coliform levels continued to comply with Class III water quality standards.

In conclusion, elevated nitrate-nitrite levels continue to be the main stressor in Ichetucknee Springs, yet the invertebrate community remains in excellent health. *Enterococci* levels continued to exceed the EPA recommended threshold, however, the applicability of *Enterococci* as a useful water quality indicator in Florida is currently under review.

Figure 1: Overview Map of the Ichetucknee River Area

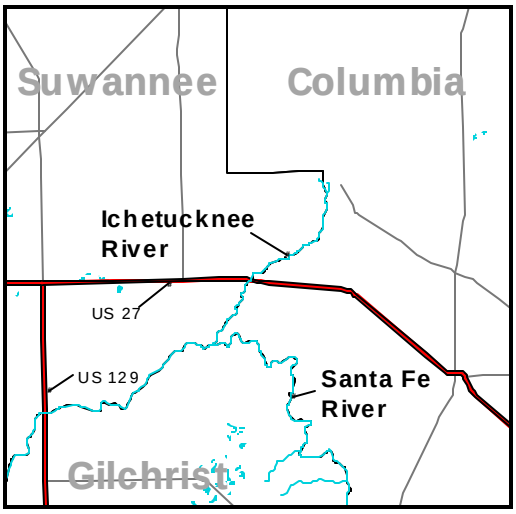


Figure 2: Data Table

ICHETUCKNEE SPRINGS				
Station			Ichetucknee Springs	
Station Nick Name			ICHETUCKN	
STORET Number			29BRNG 8704	
Macroinvertebrate Parameters	Bio. Rep. 1	Bio. Rep. 2	**Physical/Chemical Data for Biology**	
Biology Sampling Date	3/14/2001		Habitat Assessment	149
SCI	33	31	Sample Depth (m)	0.3
SCI Evaluation	excellent	excellent	Specific Conductivity (umho/cm)	299
Number of Taxa	43	36	Dissolved Oxygen (mg/L)	6.5
Number of Ephemeroptera	2	3	pH (SU)	7.8
Number of Plecoptera	0	0	Temperature (deg C)	20.9
Number of Trichoptera	6	4		
EPT Index	8	7	**Chemistry Data**	Chem. Rep. 1 Chem. Rep. 2
% Dominant Taxon	15.09	14.56	Chemistry Sampling Date	3/7/2001
Florida Index	24	12	Ammonia (mg/L)	0.02 U 0.03
% Diptera	51.89	46.2	Nitrate-Nitrite (mg/L)	0.63 0.74
Number of Chironomidae	3	2	TKN (mg/L)	0.05 0.05
Number of Orthocladiinae	13	8	Total Phosphorus (mg/L)	0.057 0.057
Total Number of Chironomidae	16	10	Ortho-Phosphate (mg/L)	0.042 0.042
% Filter Feeders	27.59	16.14	Sulfate (mg/L)	12.3 11.3
Periphyton Parameters	Bio. Rep. 1	Bio. Rep. 2	Chloride (mg/L)	6.06 7.7
Number of Taxa	25	26	Alkalinity (mg CaCO3/L)	142 140
% Bacillariophyceae	98.17	95.64	TOC (mg/L)	8.62 7.37
% Chlorophyceae	0.13	0.19	Color (PCU)	5 U 5 U
% Cyanophyceae	1.7	4.08	Turbidity (NTU)	0.35 0.35
% Euglenophyceae	0	0.09	**Physical/Chemical Data for Chemistry**	
% Dominant Taxon	49.87	37.54	Sample Depth (m)	0.5
Bacteria Parameters	Bio. Rep. 1	Bio. Rep. 2	Secchi Depth (m)	VOB
Enterococci (col/100 mL)	180	240	Specific Conductivity (umho/cm)	299
Escherichia coli (col/100 mL)	76	58	Dissolved Oxygen (mg/L)	8.31
Fecal Coliforms (col/100 mL)	100	112	pH (SU)	7.63
Total Coliforms (col/100 mL)	420	540	Temperature (deg C)	22.1

"U"-Below Detection Limit; "VOB"-Visible on Bottom

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