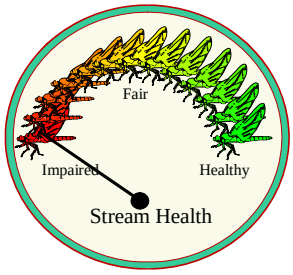
EcoSummary

Fanning Springs

11/14/2006

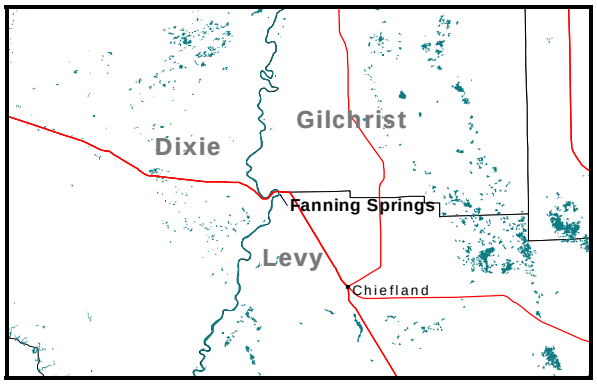


Background

Florida DEP's Division of Recreation and Parks selected Fanning Springs, as well as springs from 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. Fanning Springs State Park is located in Levy County, Florida; see Figure 1. Fanning Springs, which flows into the Suwannee River, is a Floridan Aquifer-dominated system known for its recreational and aesthetic qualities.

Samples were collected from Fanning Springs on November 14, 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 and benthic invertebrate Stream Condition Index (SCI) sampling were also conducted.

Figure 1: Map of the Fanning Springs Area



Results

The nitrate-nitrite concentration at Fanning Spring (4.8 mg/L) continued to be much higher than typical values found in 95% of Florida streams (1.05 mg/L or less). This extremely high concentration of nitrate-nitrite is problematic because it may promote excess plant growth and stimulate nuisance algal blooms. Elevated nitrate-nitrite levels in Fanning Springs Run are related to nitrogen loading in the recharge basin.

The total phosphorus and ammonia concentrations were below method detection limits. The TKN concentration was below the practical quantitation limit. *Enterococci* and *Escherichia coli* concentrations complied with the EPA single-sample guideline values of 61 CFUI/100 mL and 235 CFUI/100 mL, respectively, for "designated beach areas." Fecal and total coliform levels complied with Class III water quality standards.

The thresholds for interpreting the Stream Condition Index values have recently been revised according to the EPA Biological Condition Gradient (BCG) conceptual model In addition, the laboratory methodology used to evaluate the macroinvertebrate samples taken for the SCI was also revised to reduce variability associated with SCI results. In the SCI 2004 method, a single sub-sample of 100 individuals was identified and scored, while in the new SCI 2007 method, two separate sub-samples of 150 individuals are analyzed, and the two resulting SCI scores are averaged. The SCI 2007 produces a more robust evaluation since the decision thresholds are based on the BCG, and the examination of two separate aliquots reduces error. Note that the sampling method and the ten metrics used for calculating the score remain exactly the same. The SCI 2007 went into effect August 1, 2006.

The SCI score of 14 for Fanning Springs was in the "Impaired" category. The Habitat Assessment score of 116 was in the "Suboptimal" range (smothering and lack of substrate diversity and availability). Habitat and low dissolved oxygen, 3.0 mg/L (a natural condition) were issues affecting the SCI score.

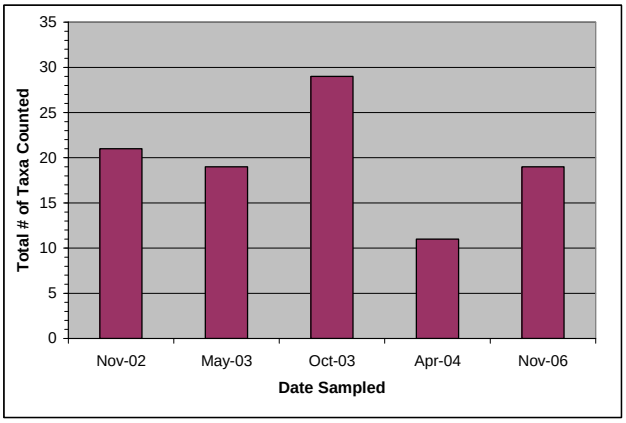
In conclusion, very elevated nitrate-nitrite levels, low dissolved oxygen, and poor macroinvertebrate community health continue to be issues of concern in Fanning Springs.

Figure 2: Data Table

Fanning Springs			
Sampling Date	11/14/2006	**Field Data**	
Macroinvertebrate Data		Habitat Assessment Score	101
SCI Score	14 A	Temperature (deg. C)	22.41
SCI Evaluation	Impaired	pH	7.08
Chemistry Data		Dissolved Oxygen (mg/L)	3.03
Turbidity (NTU)	0.10	Specific Conductance (umhos/cm)	479
Color (PCU)	5 U	**Bacteria Data**	
Ammonia (mg/L)	0.010 U	*Escherichia coli* (col/100 mL)	2 KQ
Nitrate-Nitrite (mg/L)	4.8	*Enterococci* (col/100 mL)	2 KQ
TKN (mg/L)	0.097 I	Fecal Coliforms (col/100 mL)	2 KQ
Total Phosphorus (mg/L)	0.020 U	Total Coliforms (col/100 mL)	56 Q

"U"= Below Method Detection Limit; "K"= Actual value is known to be less than value given; "Q"= Outside of holding time; "A"= Value reported is the mean of two or more determinations; "I"= Below practical quantitation limit

Figure 3: Total Macroinvertebrate Taxa Over Time



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