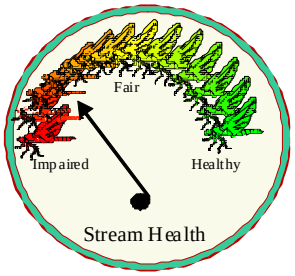


EcoSummary

Silver River Springs

5/15/2007



Background

Florida DEP's Division of Water Resource Management selected Silver River Spring for biological and water quality monitoring. Data from these efforts will be used for documenting conditions within the spring run and for making resource protection decisions. Silver River Springs is located northeast of Ocala in Marion County, Florida (Figure 1). The Silver River, which flows into the Ocklawaha River, is a Floridan Aquifer-dominated system known for its recreational and aesthetic qualities.

Samples were collected from Silver River Springs on May 15, 2007. 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 (Figure 2). Habitat Assessment and benthic invertebrate Stream Condition Index (SCI) sampling also were conducted.

Figure 1: Map of the Silver Springs Area



Results

The nitrate-nitrite concentration (1.1 mg/L) at the sampling site was higher than typical values found in 95% of Florida streams (1.05 mg/L or less). Elevated nitrate-nitrite levels in Silver River Springs are related to nitrogen loading in the recharge basin. Ammonia and TKN concentrations were below method detection limits. Total phosphorus was below the practical quantitation limit.

Enterococci and *Escherichia coli* counts complied with the EPA single-sample guideline values of 61 CFU/100 mL and 235 CFU/100 mL, respectively, for "designated beach areas." The total and fecal coliform counts 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 uncertainty associated with SCI results. In the SCI 2004 method, a single group of 100 individuals was sub-sampled, identified, and scored, while in the new SCI 2007 method, two separate groups 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. In Figure 3, the new thresholds have been retroactively applied to the scores acquired before this date.

The SCI score of 23 was in the "Impaired" range. The Habitat Assessment score of 134 was in the "optimal" category. Low dissolved and elevated conductivity (both of natural origin) were probably the main stressors associated with the reduced SCI score.

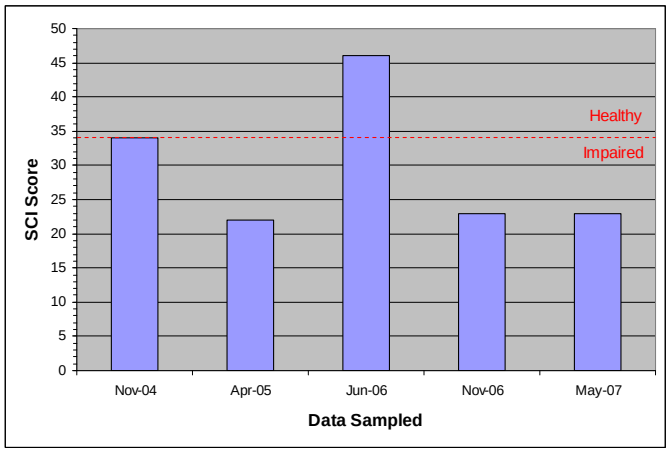
In conclusion, elevated nitrate-nitrite levels and an poor invertebrate community were the main issues of concern in Silver Springs.

Figure 2: Data Table

SILVER RIVER SPRINGS			
Sampling Date	5/15/2007	**Field Data**	
Macroinvertebrate Data		Habitat Assessment Score	134
SCI Score	23 A	Temperature (deg. C)	23.7
SCI Evaluation	Impaired	pH	6.53
Chemistry Data		Dissolved Oxygen (mg/L)	2.79
Turbidity (NTU)	0.25	Specific Conductance (umhos/cm)	479
Color (PCU)	5 UQ	**Bacteria Data**	
Ammonia (mg/L)	0.010 U	*Escherichia coli* (col/100 mL)	6 BQ
Nitrate-Nitrite (mg/L)	1.1	*Enterococci* (col/100 mL)	12 BQ
TKN (mg/L)	0.080 UJ	Fecal Coliforms (col/100 mL)	6 BQ
Total Phosphorus (mg/L)	0.036 I	Total Coliforms (col/100 mL)	18 BQ

"I"= Below practical quantitation limit; "Q"=Outside of holding time; "U"=Below method detection limit; "B"=Based on colony counts outside acceptable range; "A"= Value reported is the mean of two or more determinations; "J"= Estimated value

Figure 3: SCI Scores Over Time



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