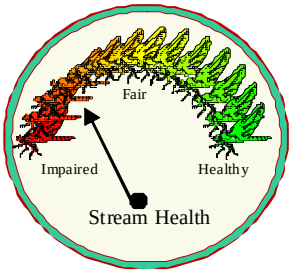
EcoSummary

Silver Glen Springs

11/29/2006



Background

Florida DEP's Division of Water Resource Management selected Silver Glen Springs for biological and water quality monitoring as part of the Springs Initiative. Data from these efforts will be used for documenting conditions within springs throughout Florida and for making resource protection decisions. Silver Glen Springs Recreation Area is located in Marion and Lake Counties, Florida, in the Ocala National Forest; see Figure 1. Silver Glen Springs flows into Lake George and is a popular location for boaters to gather.

Samples were collected from Silver Glen Springs in November, 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 Silver Glen Springs Area



Results

The nitrate-nitrite concentration (0.034 mg/L) in Silver Glen Springs was below average for typical Florida streams and much lower than values found in most FL springs. The TKN concentration was below the practical quantitation limit. The total phosphorus and ammonia concentrations were below the method detection limits.

Escherichia coli concentrations complied with the EPA single-sample guideline value of 235 CFU/100mL for "designated beach areas," but *Enterococci* concentrations exceeded the guideline of 61 CFU/ 100mL. Some species of *Enterococci* are known to be naturally free-living in warm waters, so the use of *Enterococci* as a human waste indicator may not be appropriate. Since the holding times for bacterial analyses were exceeded, these bacteria results may be unreliable.

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 28 for Silver Glen Springs was in the "impaired" range. The high conductivity (somewhat "salty" water) in Silver Glen Springs is a natural condition. However, this high conductivity will limit the diversity of freshwater organisms that can inhabit the site. The Habitat Assessment score (130) was in the "optimal" range, but substrate diversity was low.

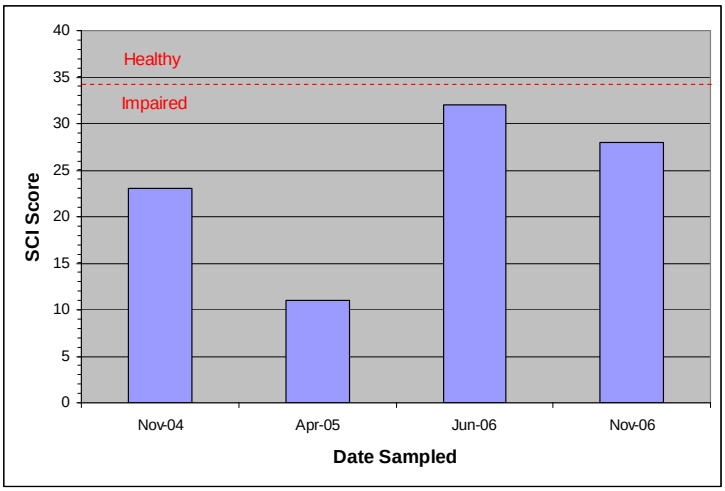
In conclusion, benthic macroinvertebrate community health was the main issue of concern in Silver Glen Springs.

Figure 2: Data Table

SILVER GLEN SPRINGS			
Sampling Date	11/29/2006	**Physical-Chemical Data**	
Macroinvertebrate Data		Habitat Assessment Score	130
SCI Score	28 A	Temperature (deg. C)	23.1
SCI Evaluation	Impaired	pH	7.85
Chemistry Data		Dissolved Oxygen (mg/L)	4
Turbidity (NTU)	0.1	Specific Conductance (umhos/cm)	1895
Color (PCU)	5 U	**Bacteria Data**	
Ammonia (mg/L)	0.010 U	*Escherichia coli* (col/100 mL)	20 BQ
Nitrate-Nitrite (mg/L)	0.034	*Enterococci* (col/100 mL)	164 BQ
TKN (mg/L)	0.13 I	Fecal Coliforms (col/100 mL)	58 Q
Total Phosphorus (mg/L)	0.020 U	Total Coliforms (col/100 mL)	134 Q

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

Figure 3: SCI Scores Over Time



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