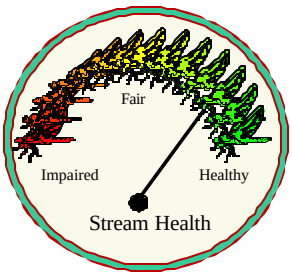


# EcoSummary

Wekiwa Springs

10/22/02




## Background

Florida DEP's Division of Recreation and Parks selected Wekiwa Springs, as well as springs from several 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. Wekiwa Springs State Park is located in Orange County, Florida (Figure 1). The Wekiva River begins in the park and then flows northeast into the St. Johns River. Wekiwa Springs is a Floridan Aquifer-dominated system known for its recreational and aesthetic qualities.

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; see Figure 2. Habitat assessment, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling were conducted.

## Results

Nitrate-nitrite concentrations (1.4 mg/L) at the sampling site were higher than those found in 95% of other Florida streams (Figure 2). Elevated nitrite-nitrate levels in Wekiwa River are related to nitrogen loading in the recharge basin. The total Kjeldahl nitrogen concentrations were below quantitation limit (Figure 2). The ammonia concentration (0.041 mg/L) and total phosphorus level (0.13 mg/L) were relatively low for Florida streams.

The overall habitat assessment score (132) was in the optimal range (>120). *Enterococci* concentration (100 CFU/100 mL) was above the EPA single-sampling guideline value of 61 CFU/100mL for "designated beach areas." Some species of *Enterococci* are known to be free-living in warm waters; the applicability of the above guideline in Florida waters is currently under investigation. *Escherichia coli* concentration (10 CFU/100 mL) was below the EPA designated beach guideline of 235 CFU/100 mL. Fecal and total coliform levels complied with Class III water quality standards. The stream condition index (SCI) score of 25 for Wekiwa Springs remained in the "good" range (the SCI was 25 on 12/6/01 and 4/17/02). The periphyton community in Wekiwa Springs was dominated by diatoms with some blue-green taxa. The particular taxa found were indicative of eutrophic conditions, which was not surprising given the continued nutrient enrichment in Wekiwa Springs.

In conclusion, elevated nitrate-nitrate levels in Wekiwa Springs continue to be the main stressor associated with a relatively low quality algal community.

Figure 1: Overview Map of the Wekiwa Springs Area

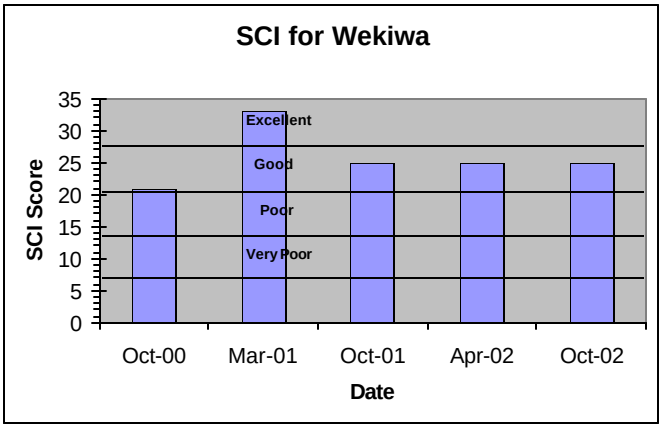



Figure 2: Data Table

| Wekiwa Springs | | | |
|---|---|---|---|
| Sampling Date | | 10/22/2002 | |
| Macroinvertebrate Parameters | | Periphyton Parameters | |
| SCI | 25 | % Bacillariophyceae | 86.71 |
| SCI Evaluation | Good | % Cyanophyceae | 10.76 |
| Number of Taxa | 33 | % Chlorophyceae | 2.22 |
| EPT Index | 3 | Dominant taxon | Diatomaceae/Fragilariaceae |
| FL Index | 11 | Percent Dominant taxon | 40.51 |
| % Dominant Taxon | 48.76 | Physical-Chemical Data | |
| % Diptera | 63.64 | Habitat Assessment | 132 |
| Total number of Chironomidae | 13 | Specific Conductivity (umhos/cm) | 338 |
| % Filter-Feeders | 28.93 | Dissolved Oxygen (mg/L) | 2.0 |
| Chemistry Data | | pH (SU) | 6.87 |
| Ammonia (mg/L) | 0.041 | Temperature (deg C) | 23.6 |
| Nitrate-Nitrite (mg/L) | 1.4 | Bacteria Parameters | |
| TKN (mg/L) | 0.15 I | *Enterococci* (col/100mL) | 100 Q |
| Total Phosphorus (mg/L) | 0.13 J | *Escherichia coli* (col/100mL) | 10 Q |
| Color (PCU) | 5 U | Fecal Coliforms (col/100 mL) | 10 Q |
| Turbidity (NTU) | 0.25 Q | Total Coliforms (col/100mL) | 400 Q |

*"I"- Below Quantitation Limit; "Q"- Information Only; "J"- Estimated Value*

Figure 3. SCI Evaluations




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