# EcoSummary

Peacock Spring #1 and Orange Grove Sink
at Peacock Springs
05/20/2003

## Background

Florida DEP's Division of Recreation and Parks selected Peacock Spring #1 and Orange Grove Sink at Peacock Springs, as well as several other springs from 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. Peacock Springs State Recreation Area is located in Suwannee County; a few miles north of the Suwannee River; see Figure 1.

Peacock Spring #1 and Orange Grove Sink are directly connected to each other through a system of underground caves. Both sites are part of the Peacock Springs system. Samples were taken from Peacock Spring #1 and Orange Grove Sink on May 20, 2003. Samples were collected for ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), total phosphorus, *Enterococci*, *Escherichia coli*, fecal coliform, total coliform, and qualitative periphyton analyses; see Figure 2.

## Results

Nitrate-nitrite concentrations at Peacock Spring #1 (2.2 mg/L) and Orange Grove Sink (2.4 mg/L) were much higher than those found in 95% of Florida streams (0.97 mg/L or lower); see Figure 2. Ammonia and TKN levels were below practical quantitation limits at both sites. Total phosphorus concentrations at Peacock Spring #1 (0.059 mg/L) and Orange Grove Sink (0.069 mg/L) were lower than the values found in 50% of state streams (0.077 mg/L). At both sites, *Enterococci* and *Escherichia coli* concentrations comply with the EPA "designated beach area" guidelines of 61 CFU/100 mL and 235 CFU/100 mL, respectively. Fecal and total coliform levels are in compliance with the Class III water quality standards (800 CFUl/100 mL and 2400 CFU/100 mL, respectively) at both locations. The periphyton communities in Peacock Spring #1 and Orange Grove Sink were dominated by diatoms with some blue-green taxa.

In conclusion, elevated nitrate-nitrite levels exist at Peacock Spring #1 and Orange Grove Sink. These observations are consistent with the findings at Orange Grove Sink in May and November 2002 and at Peacock Spring #1 in October 2001. Continued sampling will monitor conditions at both locations in Peacock Springs State Recreation Area.

Figure 1: Overview Map of the Peacock Springs Area




Figure 2: Data Table

| Peacock Spring #1 and Orange Grove Sink at Peacock Springs | | |
|---|---|---|
| | **Peacock Spring #1** | **Orange Grove Sink** |
| Sampling Date | 05/20/2003 | 05/20/2003 |
| **Chemistry Data** | | |
| Turbidity (NTU) | 0.15 | 0.35 |
| Color (PCU) | 5 | 5 |
| Ammonia (mg/L) | 0.01 U | 0.015 I |
| Nitrate-Nitrite (mg/L) | 2.2 | 2.4 |
| TKN (mg/L) | 0.097 I | 0.12 I |
| Total Phosphorus (mg/L) | 0.059 | 0.069 |
| **Periphyton Parameters** | | |
| % Bacillariophyta | 88.41 | 88.20 |
| % Cyanophycota | 10.26 | 8.85 |
| % Chlorophycota | 1.32 | 2.95 |
| Dominant Taxon | *Aulacoseira* | *Aulacoseira* |
| % Dominant Taxon | 44.70 | 54.43 |
| **Physical-Chemical Data** | | |
| Temperature (deg. C) | 21.4 | 21.5 |
| pH | 7.3 | 7.2 |
| Dissolved Oxygen (mg/L) | 2.3 | 4.8 |
| Specific Conductance (umhos/cm) | 363 | 378 |
| **Bacteria Parameters** | | |
| *Escherichia coli* (col/100 mL) | 8 | 62 |
| *Enterococci* (col/100 mL) | 6 | 86 |
| Fecal Coliforms (col/100 mL) | 4 | 100 |
| Total Coliforms (col/100 mL) | 50 | 520 |

*""U"=Below detection limit; "I"=Below practical quantitation limit*

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