EcoSummary

Deep Creek above bridge at Old River Road
10/02/01

BioReconnaissance Report (BioRecon): A rapid, cost effective screening mechanism for identification of biological impairment.

Background

Florida DEP's Division of Resource Assessment and Management sampled Deep Creek for biological and water quality monitoring as part of a Total Maximum Daily Load (TMDL) study. Previous dissolved oxygen data placed Deep Creek on the TMDL Planning List. Data from this current sampling will be combined with past and future data to determine the TMDL status of the creek (*e.g.*, potential placement on the Verified List or removal from the Planning List). Deep creek is located in Columbia County in the Northeastern Bioregion of Florida; see Figure 1.

Water chemistry samples were taken for total suspended solids (TSS), ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), and total phosphorus, see Figure 2. Habitat assessment, and benthic invertebrate sampling were also conducted.

Results

Physical/chemical parameters and nutrients were sampled in October 2001. The total phosphorus, and Total Kjeldahl Nitrogen (TKN) concentration (0.20 mg P/L and 1.2 mg/L, respectively) at the sampling site were slightly elevated, measured to be higher than the values found in 60% of Florida streams; see Figure 2. Nitrate-Nitrite concentrations were below detection limits. The ammonia concentration (0.023 mg N/L) was very low compared to other Florida streams.

Benthic invertebrate communities were sampled using the FDEP BioRecon methodology, consisting of 4 discrete dip net sweeps. The samples were field picked, then brought back to the laboratory for identification under a dissecting microscope. Three metrics; total taxa richness, Florida Index, and total EPT (larval Ephemeroptera, Plecoptera, and Trichoptera; mayfly, stonefly, and caddisfly respectively), were calculated and compared to existing Northeastern thresholds to determine the community's health. Deep Creek passed all three macro invertebrate parameters (26 total taxa, 17 Florida index, and 10 EPT taxa). The overall habitat assessment score (142) was in the "optimal" category; only water velocity, and substrate availability were found to be "suboptimal".

Deep Creek above bridge at Old River Road had slightly elevated levels of TKN (1.2 mg/L) and total phosphorus (0.20 mg P/L). However, the invertebrate community scored "Healthy" on the BioRecon, and "optimal" on the Habitat Assessment indicating good community health, and habitat. Because invertebrates integrate effects over time, these results suggest that the low dissolved oxygen reported from this site may be a natural occurrence that has not adversely affected the biota.

Figure 1: Overview Map of the Deep Creek Area

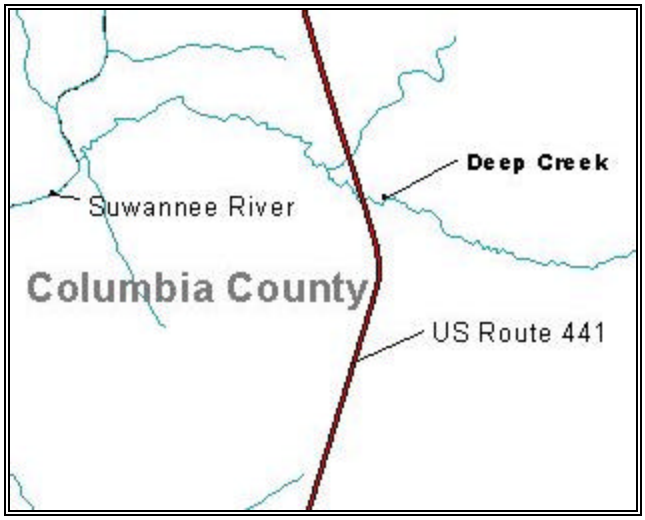


Figure 2: Data Table

Deep Creek above bridge at Old River Road			
Station		Deep Creek	
Station Nick Name		PCSREF	
STORET		21010043	
Sampling Date		10/2/01	
Macroinvertebrate Parameters		**Chemistry Data**	
Biorecon Results	Healthy	Total Phosphorus (mg P/L)	0.2
Bioregion	Northeast	Ammonia (mg N/L)	0.023
Number of Taxa	26	Nitrate-Nitrite (mg N/L)	0.02 U
Number of Ephemeroptera	3	TKN (mg N/L)	1.2
Number of Plecoptera	0	**Physical Chemical**	
Number of Trichoptera	7	Habitat Assessment	142
EPT Index	10	Sample Depth (m)	0.3
Florida Index	17	Specific Condutivity (umhos/cm)	49
Number of Diptera taxa	4	Dissolved Oxygen (mg/L)	8.4
Number of Chironomidaetaxa	1	pH (SU)	4.37
Number of Orthocladiinae taxa	1	TSS (mg/L)	4 U
Total Number Chironomidae	2	Temperature (deg C)	16.68

"U"- Material analyzed for but not detected; value reported is the minimum detection limit

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