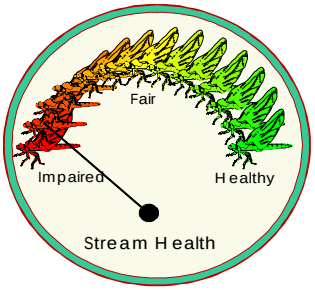


EcoSummary

BioRecon Report

Steinhatchee River
@ Hwy 51
4/6/99



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

Purpose and Background

The Steinhatchee River, located in Lafayette County, drains into the Gulf of Mexico. Lying within the Gulf Coast Flatwoods Subecoregion (75a), the land is a combination of pine flatwoods and swamp forests. Land use within the basin consists of cropland, pastures, and mixed forest lands.

The Steinhatchee River has been placed on the 303(d) list for violations of dissolved oxygen levels. Waterbodies on this list are required by EPA to have a Total Maximum Daily Load (TMDL) study performed on them. The purpose of the TMDL is to determine the amount of pollution reduction needed to restore the system to a condition suitable for its designated use. In this case, the designated use is for recreation and maintenance of a healthy, well-balanced aquatic community.

DEP's Environmental Assessment Section was requested to assess the status of selected waterbodies on the TMDL list that were placed on the list with limited data. The data available for these selected waterbodies consisted of less than 10 observations in the storet database, somewhat dated, pre-1990 information, or qualitative non-point source survey data only.

Results

Physical/chemical parameters and nutrients were sampled at the Steinhatchee River in April of 1999. Macroinvertebrate communities were sampled using 4 discrete dip net sweeps (Bio-Recon). The sample was field picked, and brought back to the laboratory for identification under a dissecting microscope. Three metrics; total taxa richness, Florida Index, and total EPT (Ephemeroptera, Plecoptera, and Trichoptera; larval mayflies, stoneflies, and caddisflies), were calculated and compared to existing eastern Panhandle thresholds to determine the community's health. A Bio-Recon is a screening tool that assesses freshwater macroinvertebrate communities based on geographic thresholds. The Steinhatchee River passed only one (total number taxa) of the three macroinvertebrate parameters, (24 total taxa, 5 Florida Index points, and 6 EPT taxa) indicating suspected impairment.

Assessment results indicate that habitat at this site was "suboptimal". Substrate diversity/availability, habitat smothering from silt, and "poor" water velocity were parameters of concern at the site.

Measured physical/chemical parameters and water quality variables did not meet all of the criteria for Class III waterbodies. Dissolved oxygen concentrations (2.0 mg/L) failed to meet the Class III water quality standard of 5.0 mg/L. Total Kjeldahl nitrogen levels (1.1 mg/L) were slightly elevated, falling within the 60th percentile distribution for Florida streams. Elevated TKN concentrations are typical, however, in swamp systems receiving high organic nitrogen levels from leaf litter. Ammonia (0.01 mg/L), nitrite-nitrate (0.016 mg/L), and total phosphorus (0.094 mg/L) levels were below the 50th percentile for other Florida streams. Turbidity levels (3.1 NTU's) were normal. Fecal coliform (17 colonies/100 ml) and total coliform (65 colonies/100 ml) counts complied with Class III water quality standards.

Suggestions

The Steinhatchee River at SR 51 failed the Bio-recon, indicating suspected impairment. Habitat was in the "suboptimal" category at this station. Habitat and biological conditions were fairly typical for the headwaters of a low gradient stream. The scarcity of sensitive macroinvertebrate taxa may be due, in part, to inadequate substrate diversity/availability and habitat smothering. Low dissolved oxygen levels and insufficient water velocity due to lack of recent rainfall may also explain the biological results. It is recommended that further study during normal flow conditions be performed.

FOR MORE INFORMATION, CONTACT:
Tom Frick, FDEP Environmental Assessment Section
2600 Blair Stone Road MS#6511 Tallahassee, FL 32399-2400 (850) 413-0247 Thomas.frick@dep.state.fl.us

Figure 1: Overview Map of the Steinhachee River

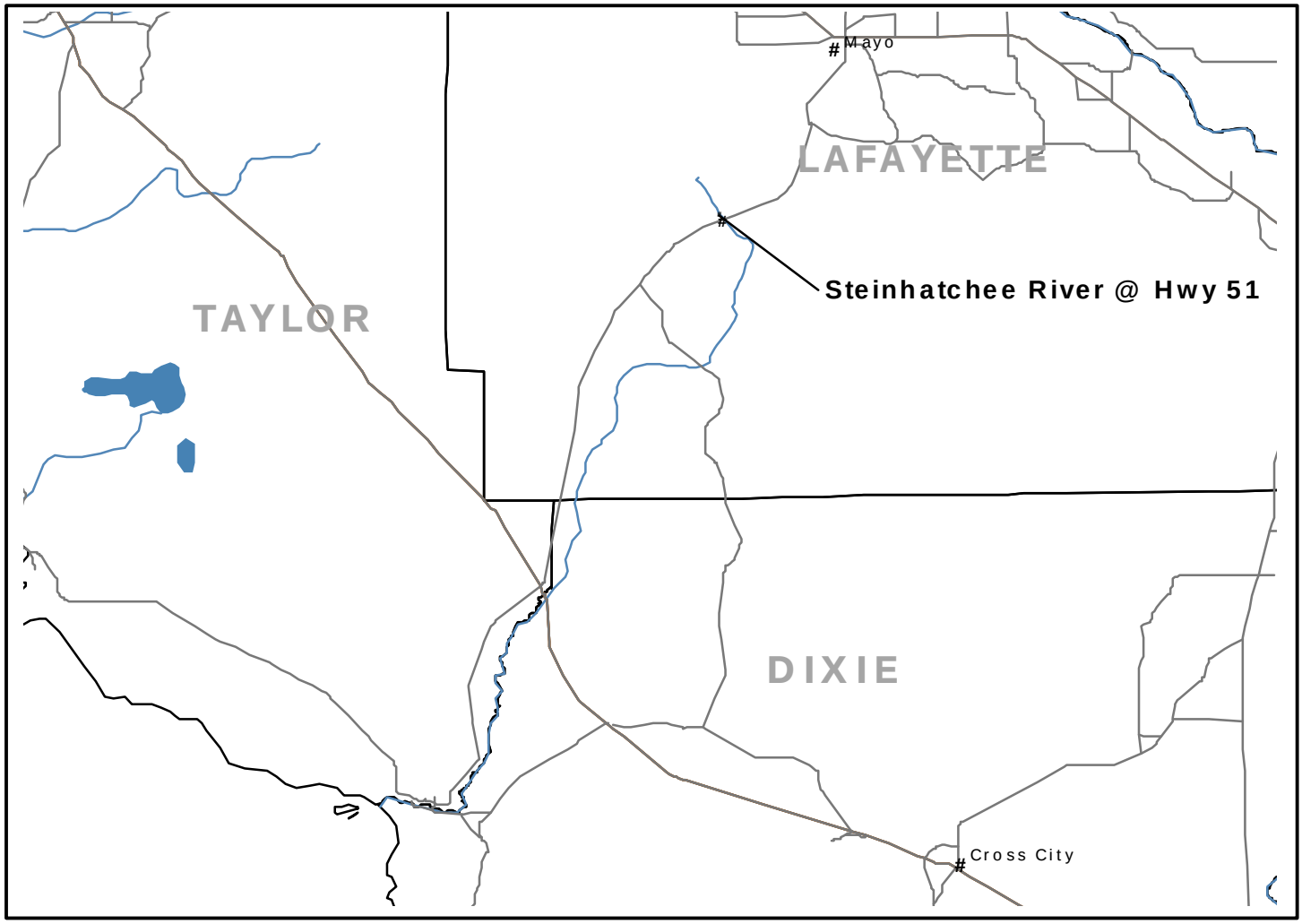


Figure 2: Data for Selected Parameters

Station	Date	# Taxa	Florida index	EPT	pH (Std Units)	Temp (C)	NH_3 (mg/L)	NOx (mg/L)	TKN (mg/L)	TP (mg/L)	Fecal coliforms (col/100 ml)	Total coliforms (col/100 ml)	TSS (mg/L)	Turbidity (NTU)
Steinhatchee River @ Hwy 51	04/06/99	24	5	6	7.1	20.3	0.01	0.016	1.1	0.094	17	65	5	3.1

Storet Code	Date	Depth (ft)	Width (ft)	Area (ft^2)	Velocity (ft/s)	Flow (cfs)	DO (mg/L)	Cond. ($uhms/cm^2$)
STN010C1	04/06/99	1.3	23	29.99	0.01	0.289	2	528

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