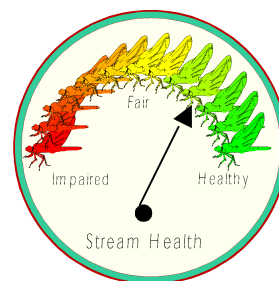


EcoSummary

BioRecon Report

Big Escambia Creek below Fanne Road in Escambia County

22 July 1998



BioRecon: A rapid, cost-effective screening mechanism for identification of biological impairment

Introduction

Big Escambia Creek is located in the eastern most tip of northeast Escambia County near Century. Most of the watershed is located in Alabama except the lower 3 miles above its confluence with the Escambia River and flows to Pensacola Bay via Escambia Bay. The headwaters of this subcoregion 65F stream are located near Monroeville, Alabama. Land use in Alabama is predominately agriculture and silviculture. The Florida land use is mostly sand and gravel mining, along with agriculture, silviculture, urban, industrial, commercial, residential, dirt road, impoundment, and transmission line usage. During 1980, mining operations caused a new channel to cut straight through forested wetlands to the Escambia River miles south of the original mouth of the sinuous Big Escambia Creek bed. Federal and State authorities are researching the feasibility of restoring Big Escambia Creek from the mining impacts. Coliform bacteria, suspended solids and turbidity were nonpoint pollution concerns, which placed Big Escambia Creek on the 303(d) list for TMDL study. 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. Big Escambia Creek is designated Class III waters for recreation and maintenance of a healthy, well-balanced aquatic community.



Big Escambia Creek below Fanne Road showing sand and gravel point bars from upstream sedimentation in excess of maximum loading capacities.

Results and Discussion

Macroinvertebrate communities were sampled on 07/22/98 from in-stream habitats by the FDEP BioRecon method below Fanne Road (STORET 33020079) in its original channel. Three metrics, consisting of total taxa richness, the Florida Index, and total EPT taxa were calculated and compared to existing thresholds to determine the community's health. Big Escambia Creek passed all 3 biometric thresholds indicating a healthy condition at the site. However, stoneflies, a clean water indicator and major component of 65f subcoregion stream communities were conspicuously rare, represented only by 2 specimens:

Biometrics	Values	Thresholds for impairment ratings
Taxa Richness	48	≥24
Florida Index	33	≥22
EPT	22	≥17



Total and fecal coliform bacteria counts (incubator malfunction and 120 colonies/100ml) were within the water quality standard (2,400 colonies & 800 /100ml) during this non-runoff period. The turbidity (8 NTU exceeding ~60% of other Florida streams) was elevated despite the lack of rain and the water turned muddy after disturbing substrates. The suspended solids (12 mg/l) exceeded ~ 70% of other Florida streams. The sediments had a musty blue-green algae odor. This area experienced a record drought during the May/June period with hot temperatures and scattered showers for July.

The habitat assessment of the site was 58% of the % similarity to the reference score. A score of 65% is an interim biometric threshold. Habitat smothering rated poor from 96% coverage of habitats with 10% sand, 42% gravel, and 40% mud/muck/silt. The available substrates were covered with a thick layer of silt. The stream banks were unstable with recent raw, eroded areas with bank sloughing. The riparian zone had some invasion of Chinese privet along with kudzu near the bridge.

Conclusions

Big Escambia Creek passed all three BioRecon metrics, indicating a healthy condition at this site. However, habitat smothering was observed an anthropogenic disturbance. Sediment sources include sand and gravel mining, agriculture, silviculture, urban, and dirt road runoff. Coliform bacteria sources include agriculture and urban runoff. The presence of coliform bacteria and turbidity were rainfall dependent. This sample was collected after a record drought so sediment and bacteria concerns were not adequately monitored for this watershed. It is recommended that Big Escambia Creek be monitored during and after significant rainfall events. This would determine sediment and bacteria effects on recreational activities for Escambia River and shellfish harvesting in Escambia Bay's Class II waters.

For more information, contact Donald Ray, FDEP Northwest District, 160 Governmental Center, Pensacola, FL 32501 (850) 595-8300 x1126