

EcoSummary

BioRecon Report



Shaw Still Branch above 2178 Chase Drive Okaloosa County July 27, 2000

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

Purpose

A bioassessment was performed at this Shaw Still Branch site to assess the impacts of the Niceville wastewater treatment plant sprayfield to its biota and wildlife habitat. It was conducted to assist to Eglin Air Force Base's Jackson Guard's project monitoring the federally endangered Okaloosa Darter found only in streams in the Niceville area.

Background

Shaw Still Branch at the bioassessment site (Lat. 30° 31' 51.7" Long. 86° 27' 14.8") is a first order stream originating in a steephead along the southwest corner of the Niceville wastewater treatment plant spray site about a mile east of Okaloosa-Walton Community College. Shaw Still Branch flows into Choctawhatchee Bay via Swift Creek and Rocky Bayou. This site drains the Gulf Coast Flatwoods subcoregion (75a) with the Southern Pine Plains and Hills (65f) in the headwaters.



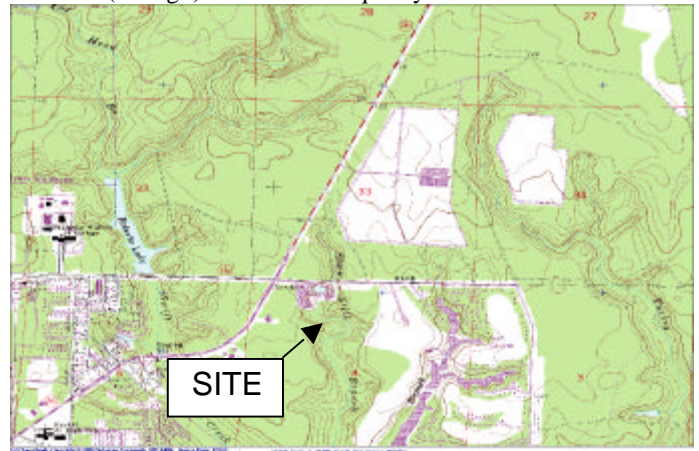
Results

The BioRecon indicated an impaired biological community. All 3 biological indicators failed thresholds established for a healthy aquatic wildlife community:

Biometrics	Value	Thresholds
Taxa Richness	17	≥24
Florida Index	6	≥22
EPT	7	≥17

The biota was dominated by pollution tolerant aquatic wildlife. Biological observations of Shaw Still Branch during 1987 found a healthy stream wildlife community with abundant stoneflies, a clean water indicator. Previous monitoring in 2000 by the Jackson Guard staff noted unusually high conductivity and decreased numbers of the endangered darter in Shaw Still Creek. Follow up monitoring by FDEP confirmed the highly elevated specific conductance (253 umho/cm). The natural conductivity of streams inhabited by the Okaloosa Darter is normally around 20 umho/cm. The most obvious potential source of these salts is the sprayfield located in the stream's headwaters. The total nitrogen concentrations of Shaw Still Branch (4.9mg/l {nitrite-nitrate =4.1mg/l}) were extremely elevated over the natural conditions of area streams

(0.2mg/l) indicating nutrient loading from a wastewater source. Organic sediments smothered 96% of the aquatic habitats, which reduced the stream's wildlife productivity. Organic loading was exacerbated by sediment problems from a closed sand mine and a culvert placed at College Boulevard that hydraulically altered the stream and encouraged beaver activity. The nutrient loading and hydrological stream modifications led to a dissolved oxygen violation (3.6mg/l) of State water quality standards.



Significance

This Shaw Still Branch site did not meet Class III State Water Quality Standards 62-302 for recreation and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife. Elevated nutrients, habitat modification, dissolved salts and low oxygen contributed to this stream not meeting State designated use. Reduced stream flow from the culvert and sand mine damming impairs the stream's fish and wildlife nursery function. Habitat destruction from sedimentation and water pollution from the nitrite-nitrate source negatively affects Shaw Still Branch, Swift Creek, Rocky Bayou, and Choctawhatchee Bay's fish and wildlife. Reduced flows, nutrient, and organic sediment loading could affect the federally endangered Okaloosa Darter, which inhabits Shaw Still Branch. Continued nutrient loading to Rocky Bayou could lead to cultural eutrophication problems such as fish kills and algal blooms which have occurred in Jose Bayou and Bayou Texar.

Suggestions

Upgrade the Niceville wastewater treatment plant to advanced wastewater treatment in order to obtain nutrient removal. The local sandy soil does not have the capacity for nutrient uptake. Restoration of the stream's natural hydrology (i.e. flow, depth) and preserving riparian wetland forests buffer zones would benefit the watershed's fish and wildlife including the endangered Okaloosa darter. **For more information, contact Donald Ray, FDEP Northwest District, 160 Governmental Center, Pensacola, FL 32501 (850) 595-8300 x1126 or SC 695-8300**