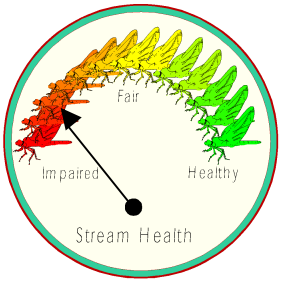
Bio-Reconnaissance

EcoSummary

BioRecon Report



White Oak Creek below County Road 191 Santa Rosa County
March 16, 2000

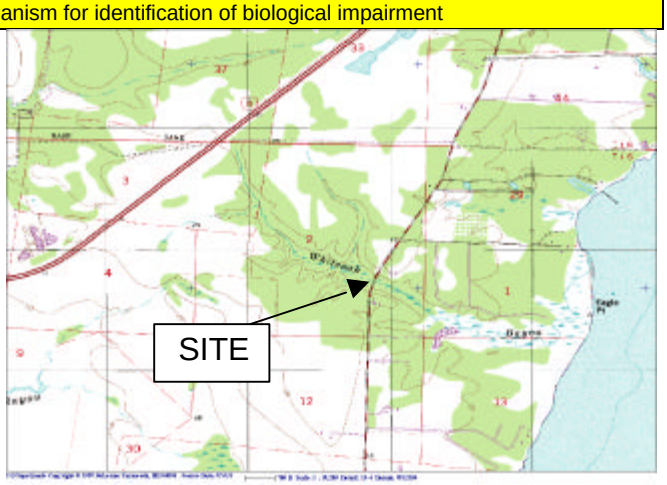
BioRecon: A rapid, cost-effective screening mechanism for identification of biological impairment

Purpose

A bioassessment was performed on White Oak Creek in an effort to document the environmental health of streams flowing into the Yellow River Aquatic Preserve (YRAP). The BioRecon was conducted in partnership with the YRAP staff.

Background

White Oak Creek at the bioassessment site is a second order stream originating above I-10 about 5 miles south of Milton in Santa Rosa County (Lat. 30° 32' 00.5" Long. 87° 03' 08.5"). This stream flows to White Oak Bayou in Blackwater Bay, at Eagle Point, then into Pensacola Bay. This site drains the Gulf Coast Flatwoods subecoregion (75a).



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	4	≥22
EPT	3	≥17

The biota was dominated by pollution tolerant aquatic wildlife. The impoundment created by the CR-191 road culvert caused water quality problems in White Oak Creek. The dissolved oxygen concentrations (3-4.7 mg/l in March, 2 mg/l in May) did not meet State Water Quality Standards. The May biochemical demand was very high (5.1 mg/l) with elevated nutrients (ammonia 89 ug/l, nitrogen 1000 ug/l, phosphorus 61 ug/l) present. The elevated nutrients led to an algae bloom with a very high chlorophyll A concentration of 56 ug/l. Sediments were anaerobic with a hydrogen sulfide odor. Silt smothering of fish and wildlife habitats was severe.

Significance

This White Oak Creek 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. The dam effects of the CR191 culvert crossing contributed to White Oak Creek not meeting State designated use. Organic sediment and nutrient loading from the impoundment created an elevated biochemical oxygen demand (5.1mg/l) that caused oxygen depletion. Reduced stream flow from the damming negatively affect the system's fish and wildlife nursery function. Altered habitats from culverts and clearing streambank riparian zones negatively affects the Yellow River Aquatic Preserve's fish and wildlife in White Oak Bayou and the lower portion of Blackwater Bay. Reduced flows, nutrient, and organic sediment loading could affect the federally endangered Gulf of Mexico sturgeon.

Suggestions

Restoration of the stream's natural hydrology (i.e. flow, quantity) and preserving riparian wetland forests buffer zones would benefit the Aquatic Preserve's fish and wildlife community including the sturgeon. Replacing culverts with bridges that span the streamside wetlands and restoration of the watershed's natural hydrological patterns could enhance Live Oak Bayou as a nursery area for aquatic wildlife in the Pensacola Bay basin. Nutrient sources that created the algae bloom were unknown. Background nutrient concentrations in area watersheds are naturally very low. Possibly fallout from 2 major industrial manufacturing air pollution dischargers within 3 and 5 miles of the watershed is a nutrient source. **For more information, contact Donald Ray, FDEP Northwest District, 160 Governmental Center, Pensacola, FL 32501 (850) 595-8300 x1126 or SC 695-8300**