

Caney Creek above Thad Bell Road Walton County March 1, 1999

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

Purpose

A BioRecon was performed at this site to monitor potential nonpoint source impact in the Pensacola Bay system for a 319 Agriculture Outreach Program grant. This bioassessment was used to determine the health of Caney Creek's biota and habitats. The site was chosen by the use of geographic information systems to identify areas of agricultural land use.

Background

Caney Creek at the bioassessment site (Lat. 30° 53' 59.0" Long 86° 12' 38.5") is a third order stream draining agricultural lands (row crop and



pasture) east of the Gordon community, of the town of Paxton. It is a tributary to Big Swamp Creek and the Shoal and Yellow Rivers that all flow into Pensacola Bay via Blackwater Bay. Caney Creek drains some of the highest elevations in Florida (300 feet above sea level). The watershed is located in the southern pine plains and hills of subcoregion 65F. Historically there have been complaints of pesticide use that caused fish kills in Caney Creek.

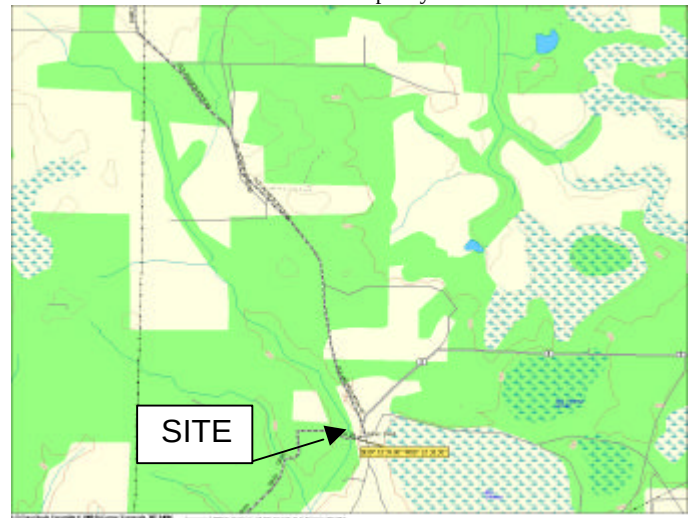
Results

The BioRecon indicated impairment of Caney Creek's biological community. Two of three biological indicators failed to meet thresholds established for a healthy aquatic ecosystem:

Biometrics	Value	Threshold
Taxa Richness	24	≥ 24
Florida Index	12	≥ 22
EPT	7	≥ 17

The imbalanced aquatic community was dominated by the bacteria feeding blackflies (*Simulium*) and had an abundance of midges (chironomidae) found in organically enriched water. Stream habitats were 95% smothered with mud/muck/silt. A 0.5 to 1-meter deposit of mud/muck/silt filled the entire 100-meter sample reach. The site's habitat assessment score rated 63% in the lower suboptimal range (101 out of 140 points). The primary habitat components such as substrate availability and smothering scored only 31 of 80. The habitat score was boosted by the optimal scores of the secondary components such as sinuosity, riparian zone buffer width and vegetation (70 of 80). Dredging channelized the stream near the bridge. *Ligustrum*, an invasive shrub recently invaded the riparian zone. An abundance of bluegreen algal mats were present in areas exposed to sunlight. The water and sediments had a musty odor due to excess

bluegreen algae production. The sediments had an anaerobic odor. This reducing substrate along with a dissolved oxygen saturation of only 62% indicated stream oxygen depletion problems during warmer seasons. The over abundance of anaerobic, fine particulate organic matter (fpom) indicated the stream had exceeded its capacity to assimilate wasteloads.



Significance

The results confirm this stream is degraded by human activities. This Caney 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 anaerobic organic deposits did not meet 62-302.500(a) "Domestic, industrial, agricultural, or other man-induced non-thermal components of discharges which, alone or in combination with other substances or in combination with other components of discharges (whether thermal or non-thermal): 1. Settle to form putrescent deposits or otherwise create a nuisance or 2. Float as debris, scum oil, or other matter in such amounts as to form nuisances; or 3. Produce color, odor, taste, turbidity, or other conditions in such degree as to create a nuisance;" The dominance of the blackfly created conditions of concern in Caney Creek to Florida Surface Water Quality Standard 62-302.530(47) (Nuisance Species). Blackfly adults have been implicated in transmission of diseases to livestock including bovine onchocerciasis, *Leucoytozon smithi*, a disease in domestic turkeys, and a transmitter of a disease that kills poultry. Low order streams like Caney Creek are a major food and habitat source for the downstream river and estuarine fish and wildlife. Impairment to these tributaries limits downstream productivity of fish and wildlife. Runoff from the watershed's agricultural lands had filled much of Caney Creek's wetland and stream habitats eliminating native species and promoting invasive exotics. This sediment runoff contributes to downstream turbidity and the filling of Shoal/Yellow Rivers and Blackwater/Pensacola Bays habitats.

Suggestions

Implement best management practices for agriculture. Use agricultural management practices that restore native riparian and transitional zone forests to protect water quality and enhance fish and wildlife diversity and productivity. Use of USDA's Stream Corridor Restoration document "http://www.usda.gov/stream_restoration" could assist in the restoration of Caney Creek. **For more information, contact Donald Ray, FDEP Northwest District, 160 Governmental Center, Pensacola, FL 32501 (850) 595-8300 x1126 or SC 695-8300**