EcoSummary

"Schoolhouse " Steephead below Bluewater Bay Elementary School

March 20, 2008

AMBIENT STATUS MONTR

FAIL

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

For samples collected before June 8, 2004
All field and laboratory methods followed FDEP Standard Operating Procedures and met FDEP quality assurance/quality control standards.
For samples collected on or after June 8, 2004
All field and laboratory methods followed FDEP Standard Operating Procedures (SOPs) and met DEP quality assurance/quality control standards.

Purpose



This BioRecon was performed at Schoolhouse Branch (un-named stream on the USGS map - the name was chosen because Bluewater Bay Elementary School is adjacent to this stream) below the steephead near the eastern boundary line of Fred Gannon Rocky Bayou State Park. The bioassessment was requested by Rocky Bayou Aquatic Preserve http://www.dep.state.fl.us/coastal/sites/rocky/and Fred Gannon Rocky Bayou State Park personel. The water quality and biological stream health data was needed to assist in the management of the State Lands.

The Rocky Bayou Aquatic Preserve management plan states that the "Rocky Bayou Aquatic Preserve was designated as such in 1970 for the primary purpose of preserving the biological resources in the area and maintaining these resources in an essentially natural condition" http://www.dep.state.fl.us/coastal/downloads/management_plans/aquatic/RockyBayou.pdf.

Chapter 18-20, Florida Admistative Code specifically addresses aquatic preserves. The intent of rule is contained in Section 18-20.001, F.A.C., which states in part (1) "All sovereignty lands within a preserve shall be managed primarily for the maintenance of essentially nature conditions, the propagation of fish and wildlife..."

(2)"...established for the purpose of being preserved in essentially natural or existing condition so that their aesthetic, biological and scientific values may endure for the enjoyment of future generations."(3) "The preserves, shall be administered and managed in accordance with following goals: (a) to preserve, protect, and enhance these exceptional areas of sovereignty submerged lands by reasonable regulation of human activity within the preserves through the development and implementation a comprehensive management program; (e) to encourage the protection, enhancement, or restoration of the biological, aesthetic, or scientific values of the preserves, including but not limited to modification of existing man-made conditions towards their natural condition, and discourage activities which would degrade the aesthetic, biological, or scientifice values, or the quality, or utility of a preserve, when reviewing applications, or when developing and implementing management plans for the preserves; (f) to preserve, promote, and utilize indigenous life forms and habitats... (h) to maintain those beneficial hydrologic and biologic functions..."

Watershed Characteristics

Schoolhouse Branch at the bioassessment site (STORET 32010266) was located less than a mile east of Niceville in Okaloosa County (Latitude N30 degrees 29 minutes 36.8 seconds; Longitude W-86 degrees 25 minutes 13.3). This stream drains the sandhills on the south shore of Rocky Bayou and flows directly to Rocky Bayou, which emptys into Choctawhatchee Bay. The watershed is in the Gulf Coast Flatwoods of subecoregion 75a. Schoolhouse Branch is designated Class III waters for recreation and maintenance of a healthy, well-balanced aquatic community and is also an Outstanding Florida Water (OFW) (Chapter 62-302.700, (9)(c)27 and (9)(h)34, F.A.C.). The Rocky Bayou Aquatic Preserve management plan states "Due to its natural attributes the Rocky Bayou Aquatic Preserve was designated as an "Outstanding Florida Water" on March 1, 1979. An OFW designation by the Department of Environmental Protection (DEP) places more stringent standards in the issuance of DEP permits. Permit applications for activities that lower ambient water quality within designated OFW's are normally denied." The Bluewater Bay housing development is located along Schoolhouse Branch's eastern drainage on the State Park border. The Bluewater Bay Elementary School stormwater pond is located about a hundred feet from the steephead. Both adjacent streams, Puddin Head and Gannon Creeks have been dammed and impounded.

Results

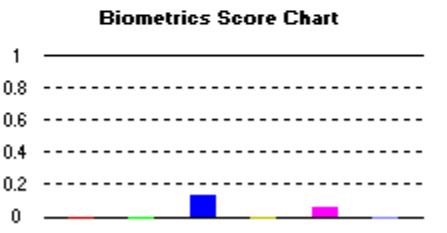
The bioassessment indicated a severely impaired biological community, scoring only 0.2 out of 10 for the BioRecon Score. All 6 biological indicators failed thresholds established for a healthy aquatic wildlife community:

Biometrics	Metric Score
# TOTAL TAXA	0
# EPHEMEROPTERA TAXA	0
# TRICHOPTERA TAXA	0.14
# LONG-LIVED TAXA	0
# CLINGER TAXA	0.06
# SENSITIVE TAXA	0
TOTAL METRIC SCORE :	0.2
f Correction Factor :	0.6
= BIORECON SCORE :	0

○ Pass 6 - 10
◉ Fail 0 - 5

"SCHOOLHOUSE " STEEPHEAD BELOW BLUEWATER BAY ELEMENTARY SCHOOL

BioRegion : Panhandle West
Sample Date : Mar 20, 2008



Only 9 Total Taxa were collected in the field sort. Since so few macroinvertebrate taxa were collected or observed in the field, the entire sample was brought back to the laboratory and re-sorted for quality assurance purposes. Sorting through the entire sample in the lab only yielded 8 Total Taxa, not finding a cranefly, which only one indivdual was found during the field sort. The Florida Index was only one and needed a score of 22 cleanwater indicators to pass. The Total EPT was also only one and needed a score of 17 taxa of the mayflies, stoneflies, and caddisflies to reach the threshold for stream health. The EPT for mayflies, stoneflies, and caddisflies are the major component of healthy well-balanced Florida panhandle streams. A few mosquito fish and shiners were observed in the stream. Salmanders, typical of the headwater stream, were also present. There were low numbers of insects in the Schoolhouse Branch observed during this BioRecon. A contributing factor could possibly be the application of pesticides in the surrounding area and housing developments. Also, there was an unusual occurance of sighting a dead pelican and bluejay along the stream bank.

The Schoolhouse Branch Habitat Assessment rated between optimal and suboptimal (81%), down-graded only by marginal conditions for Habitat Smothering (67% silt and algae). Water Velocity, Artificial Channelization, Bank Stability, Riparian Buffer Zone Width, and Riparian Zone Vegetation Quality rated optimal.
Substrate Diversityand Substrate Availability rated suboptimal.

The silt load might be explained by the low numbers of collector-gatherer aquatic insects found during this BioRecon. These insects feed on the leaf and woody debris from the canopy of panhandle forested headwater streams. The organic components (leaves and wood) were decomposing, but the normal insect population was not present to consume the fine particulate organic matter (FPOM).

A filamentous algae bloom occured in open reaches of Schoolhouse Branch where sunlight penetrated to the stream. The panhandle sandhills are naturally extremely

low in the nitrogen and phosphate that stimulates algal growth. One contributing factor to the algae blooms may be fertilizer application in the surrounding areas or housing developments. Due to the geology of the area (sandhills) fertilizers and/or pesticides have the potential to leach to groundwater and discharge to this stream.

The dissolved oxygen (DO) concentration of 6 mg/l at 0.3 meters depth met 62-302.530(30), F.A.C., standards. The percent DO concentration was 67% lower than expected in panhandle streams, problably caused by the oxygen demand from bacteria consuming the FPOM. Conductivity was 46 umho/cm at Schoolhouse Branch, typical of panhandle streams with very low salt concentrations in quartz sand soils. The pH was 4.12 standard units, again the typical acidic waters of the non-buffered western panhandle sand hills. Water temperature was 20.68 degrees centigrade, the norm expected of groundwater seeping from the steephead upstream.

Sediment odors were normal. Sediment and water surface oils were absent. The water was clear, with no color or odor. The secchi disc reading was visible on the bottom at 0.5 meters. Iron/sulfur bacteria and aquatic macrophytes were absent.

Conclusions

The Schoolhouse Branch site did not meet Class III State Water Quality Standards of Rule 62-302, F.A.C. for recreation and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife. Contributing factors may possibly be the application of fertilizers/pesticides in the surrounding areas and housing developments located in close promimity to the stream. Encouragement of the adjacent landowers to maintain additional natural woodland buffer strips and reduce chemical management of lawns, and careful useage of sprays to control nuisance pests would be of assistance in the restoration of the State Lands to their designated natural uses. Two homeowners, adjacent to the stream, did observe the BioRecon and upon discussions with DEP biologists intended to discuss restoratrion principles and further actions with neighbors.

For more information, please contact
Donald H. Ray
Northwest District Office
160 Government Center, Pensacola, FL 32502
(850) 595-8300 (Suncom 695-8300 x 1126)
E-mail: donald.ray@dep.state.fl.us

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For more information on the DEP Bioassessment programs, please visit our web site at http://www.dep.state.fl.us/water/bioassess

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