EcoSummary

Black Hammock Creek below Yellow River Aquatic Preserve Office Fire Lane

January 31, 2007

YELLOW R AQUAT PRES

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 bioassessment was a request by the Yellow River Aquatic Preserve (YRAP) office to support a potential land acquisition for the State of Florida. Black Hammock Creek drains in part land owned and managed by the YRAP. YRAP mangers would like to acquire additional land within the watershed to protect its water quality and wildlife value for the Yellow River Marsh Aquatic Preserve. The Black Hammock Creek watershed is possible habitat for the Flatwoods Salamander listed as threatened by the United States Fish and Wildlife Service under provisions of the 1973 Federal Endangered Species Act. The Yellow River Marsh is afforded protection as Outstanding Florida Waters in Florida Surface Water Standards 62-302.700 (9) (h) 43.

Watershed Characteristics

Black Hammock Creek at the sample site (STORET # 33030178) is a first order stream (second order where it flows into the Bay) originating in former wetlands on Garcon Point in the Gulf Coast Flatwoods subecoregion 75a. The sample site (N 30 degrees 29 minutes 39.6 seconds W 87 degrees 3 minutes 39.8 seconds) is located approximately

4 miles due south of Milton, a few hundred feet east of County Road 191 in Santa Rosa County. Black Hammock Creek flow into East Bay directly across from the Yellow River delta. East Bay is part of the Pensacola Bay system.

Results

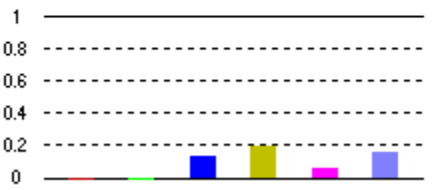
The bioassessment indicated a severely impaired biological community. All 6 biological indicators failed thresholds for a healthy aquatic wildlife community:

Biometrics	Metric Score
# TOTAL TAXA	0
# EPHEMEROPTERA TAXA	0
# TRICHOPTERA TAXA	0.14
# LONG-LIVED TAXA	0.2
# CLINGER TAXA	0.06
# SENSITIVE TAXA	0.16
TOTAL METRIC SCORE :	0.56
/ Correction Factor :	0.6
= BIORECON SCORE :	1

Pass 6 - 10
Fail 0 - 5

BLACK HAMMOCK CREEK @ FIRE LANE CROSSING BEHIND YRAP OFFICE OC CR 191

BioRegion : Panhandle West
Sample Date : Jan 31, 2007



The imbalanced macroinvertebrate community was dominated by Isopods (sow bugs) and Amphipods (scuds). The primary biological indicators of stream health had only 7 Total Taxa, 2 Florida Index points, and 1 EPT. Aquatic insects, normally mayflies, stoneflies, and caddis flies (EPT) are the dominate benthos in healthy, low-order panhandle streams. The only insects collected were 1 caddis fly and 1 beetle along with 2 black flies and a dozen midges. The dominance of non-insects with almost no long-lived and sensitive taxa suggested insecticide application affected the stream community. The County Road 191 drainage ditches on the sample date were full and flowing into Black Hammock despite the previous dry year (2006 rainfall approximately 20 inches below normal) because of the high water table of this low land area situated between East and Escambia Bays.
The ditches are used to drain wetlands for roads, development, livestock, and silviculture. The County maintained the ditches and has applied insecticides for mosquito control. Other streams on Garcon Point flowing into the Aquatic Preserve had similar impaired stream communities during bioassements conducted in 2000: Jakes Bayou Creek (Total 11 Taxa, 1 Florida Index, 0 EPT), Sandy Point Creek (18 Total Taxa, 1 Florida Index, 0 EPT), and White Oak Creek (Total 17 Taxa, 4 Florida Index, 3 EPT). In contrast to across the Bay on Aquatic Preserve lands bordering Eglin Air Force Base, the streams were healthy: Hicks Branch (Total 50 Taxa, 38 Florida Index, 24 EPT), Catfish Branch (Total 34 Taxa, 25 Florida Index, 17 EPT).

The dissolved oxygen concentration was 6.97 mg/l at 61% saturation at 9.44 degrees

centigrade. The pH was 4.24 standard units, typical of tannic streams originating in wetlands. Conductivity 596 umho/cm was above the normal less than 100 umho/cm, possibly a result of Hurricanes Dennis and Ivan 2 and 3 years ago. The water was clear and tannic with a secchi visible on the bottom at 0.5 meters. Water odors were normal as were the bottom sediments except for hydrogen sulfide in one spot. Water surface and sediment oils were absent, as was iron/sulfur bacteria. There was no sand deposition and moderate silt smothering (8%). Periphyton was rare and aquatic macrophytes absent. Fish were absent, probably because the lack of insects, the major food of mosquito fish and killifish, which are usually abundant in these small streams.

This Black Hammock Creek site habitat assessment rated optimal (84%). Five out of eight habitat parameter rated optimal: Substrate Availability, Habitat Smothering, Artificial Channelization, Bank Stability, and Riparian Buffer Zone Width. Substrate Diversity, Water Velocity, and Riparian Zone Vegetation Quality rated suboptimal.

The information noted above and the 92% habitat available at this site for aquatic insects (including 81% leaf pack/mats, which was not being consumed) suggest pesticide application on Garcon Point may have affected the biological community health of streams within and flowing to the Yellow River Aquatic Preserve.

Conclusions

This Black Hammock 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. Healthy stream communities are valuable for the ecological stability of the Yellow River Aquatic Preserve. The wildlife productivity and detritial export from the area's stream support the downstream estuarine community in the East Bay. For example the federally listed endangered Gulf Sturgeon feed on benthic macroinvertebrates before swimming up stream to spawn in the Yellow River headwaters. Gulf sturgeons migrate along the Bay's shoreline near the mouth of Black Hammock Creek and have been collected and tagged by YRAP staff near this location. Insecticides for mosquito control affecting Black Hammock Creek's non-target stream community may impact the Flatwoods Salamander and estuarine biota including the Gulf Sturgeon. State purchase of land for the Yellow River Aquatic Preserve would help protect Black Hammock Creek, which would benefit fish and wildlife including the Gulf Sturgeon and potentially the Flatwoods Salamander.

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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