EcoSummary

East Fork Magnolia Creek below culvert on Owls Head Farm

January 11, 2005

FLORIDA AMBIENT

PASS

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.

Introduction



This Biological assessment monitored an Ecosystem Restoration Project in East Fork Magnolia Branch conducted jointly by South Walton Utilities Inc., Nokuse Plantation, and the United States Fish and Wildlife . An earthen dam that impounded this stream reach was removed and replaced with a large culvert to match bankfull stream channel. Floodplain drain culverts were placed at elevations to allow more natural stream flows. Additionally, sediment runoff from dirt roads was directed away from the stream and bare soils along the stream were vegetated. The pre-existing culvert had impounded the creek above the dirt road, which altered the stream's natural hydrology, impairing the downstream biological community. In addition, dirt road sediment, organic deposits created by the dam, and soil from dam failures smothered 95% of stream habitat in this reach below the road. The BioRecon documented the condition of the biological community as a measure of stream health approximately one year after the completion of the restoration. The BioRecon sample reach (Latitude 30 degrees 34 minutes 7.1 seconds North, Longitude 86 degrees 4 minutes 49 seconds West) is located about 2.5 miles northeast of Freeport in Walton County. This East Fork Magnolia Creek site (STORET # 32010033) is at least a second order stream draining the Gulf Coast Flatwoods of subecoregion 75A near the border with Southern Pine Plains and Hills subecoregion 65F. East Fork Magnolia Creek is a tributary to Lafayette Creek and flows into Choctawhatchee Bay via LaGrange Bayou.

Results

This East Fork Magnolia Creek site below the road culverts improved to passing with a 7 of 10 BioRecon score indicating a healthy condition.

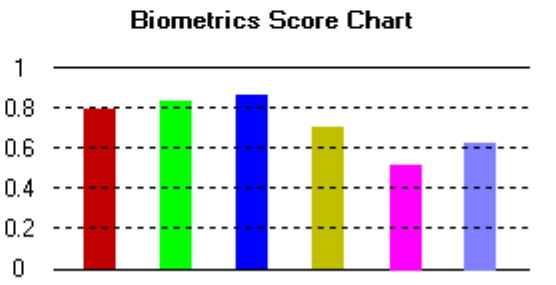
Biometrics	Metric Score
# TOTAL TAXA	0.79
# EPHEMEROPTERA TAXA	0.83
# TRICHOPTERA TAXA	0.86
# LONG-LIVED TAXA	0.7
# CLINGER TAXA	0.52
# SENSITIVE TAXA	0.63
TOTAL METRIC SCORE :	4.33
/ Correction Factor :	0.6
= BIORECON SCORE :	7

(•) Pass 6 - 10
( ) Fail 0 - 5

EAST FORK MAGNOLIA CREEK BLW CULVERT ON 1ST AMRE FRM AKA OWLS HEAD FARM REST PR

BioRegion : Panhandle West

Sample Date : Jan 11, 2005



During the 2003 pre-restoration biomonitoring this site failed to meet two of three biometrics in use before June 2004 to indicate an impaired condition.

The site's aquatic wildlife diversity and community structure improved substantially after restoration activities improved the upstream's reach's hydrologic function and reduced sedimentation. It now passed all three biometrics used for assessment prior to June 2004 as well as the current assessment measurements. Stoneflies were now found with three species present. EPT taxa (mayflies, stoneflies, caddisflies), the most robust biometric that declines with human disturbance, improved from 12 to 19. Total taxa increased from 27 to 42 and the Florida Index, which measures clean water indicators improved from a score of 20 to 32. The habitat score improved marginally from 54% to 58% indicating that upstream water quality/hydrology enhancements were mainly responsible for the improved BioRecon score. Sediments washed in this stream reach over the years before the upstream restoration activities will be flushed during heavy rain events, which will both reduce habitat smothering and substantially increase future habitat availability.

Conclusions

After restoration, this East Fork Magnolia Creek site met 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 project restored the upstream reach above the road to a sinuous stream channel, improved water velocity, and vegetated barren slopes. Improvement of water quality conditions through the restoration activities above the road has benefited the stream's biological community at this site below the road. Further improvements are expected over time as the sediments from pre-restoration run-off are flushed downstream.

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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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