EcoSummary

East Fork Magnolia Creek below culvert on Owls Head Farm

January 30, 2007

NPS BIOASSESSMENTS

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 was the third post-restoration bioassessment that 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 during 2003/4 and replaced with a large culvert to match the bankfull stream channel. Floodplain drain culverts were placed at elevations to allow more natural stream flows. 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. This BioRecon documented the condition of the biological community as a measure of stream health approximately three years after the completion of the

restoration.

Watershed Characteristics

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

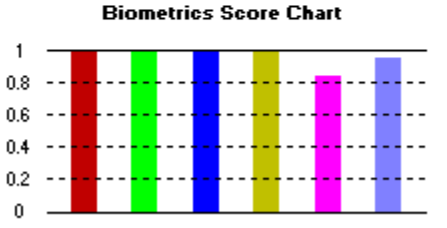
This East Fork Magnolia Creek site has continued to improved and passed with a BioRecon Score of 10 out of 10, indicating a healthy condition.

Biometrics	Metric Score
# TOTAL TAXA	1
# EPHEMEROPTERA TAXA	1
# TRICHOPTERA TAXA	1
# LONG-LIVED TAXA	1
# CLINGER TAXA	0.84
# SENSITIVE TAXA	0.95
TOTAL METRIC SCORE :	5.79
/ Correction Factor :	0.6
= BIORECON SCORE :	10

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 30, 2007



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. This pre-restoration background had a Taxa Richness of 27, Florida Index 20, and EPT 12. The habitat was scored a low suboptimal (54%).

The first post-restoration biomonitoring during January 2005 found significant improvement for the stream community (Taxa Richness 42, Florida Index 32, and EPT 19); this included 3 stonefly taxa, the best indicator of water quality for panhandle streams. The habitat score improved marginally from 54% to 58%.

The second year after restoration in January 2006, East Fork Magnolia Creek continued to improve and 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 Taxa Richness (42), FI (36), and EPT (21)

continued to show some improvement and stoneflies increased to 5 taxa. Darter, shiners and salamanders were common. The habitat score improved to an optimal 72% from a suboptimal 58%.

This third year bioassessment in January 2007 had again found the wildlife had been significantly restored to a healthy stream community (total taxa 53, Florida Index 39, and EPT 25) from the dam affected wildlife population in 2003. The biometric score chart above, rated 4 out of 6 biometric at 100% with the other 2 at 84% and 95%. The site's aquatic wildlife diversity and community structure has continually improved after restoration of the up stream's reach's hydrologic function and reduction of sedimentation. This site has greatly surpassed the three biometrics (Taxa Richness, Florida Index, and EPT) used rate stream health prior to June 2004 as well as scoring the maximum ten for the post-2004 stream health assessment measurements. The habitat score of an optimal 71% leveled out compared to 2006 (72%) because of a rainfall deficit of about 20 inches below normal for the previous year that reduced stream velocity.

Conclusions

This third year after restoration bioassessment found East Fork Magnolia Creek improved again and continued to 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. Its biometrics are approaching those of Muddy Branch (Taxa Richness 51, Florida Index 40, and EPT 31), a smaller first order stream that was in the process being naturally restored by benign neglect after the landowner retired from agriculture and silviculture activities. However, larger order streams such as East Fork Magnolia Creek when undisturbed will have more diverse macroinvertebrate populations compared to smaller first order systems like Muddy Branch. As examples, the fourth order Pond Creek had a Taxa Richness of 74, Florida Index of 49, and EPT of 37 and Alaqua Creek, approximately four miles to the northwest of East Fork Magnolia Creek had a Taxa Richness of 69, Florida Index of 50, and EPT of 41.

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