FLORIDA AMBIENT PASS

EcoSummary

East Fork Magnolia Creek above culvert on Owls Head Farm

January 11, 2005

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., Nokeuse Plantation, and the United States Fish and Wildlife Service. An earthen dam that impounded this stream reach was removed and replaced with a large culvert, designed to match the bankfull stream channel. Floodplain drain culverts were placed at elevations to allow more natural stream flow. Sediment runoff from dirt roads was directed away from the stream and bare soils along the stream were vegetated. BioRecons documented the condition of the biological community as a measure of stream health before and about a year after completion of the restoration project. The sample reach (Latitude 30 degrees 34 minutes 5 seconds North, Longitude 86 degrees 4 minutes 47.6 seconds West) is located about 2.5 miles northeast of Freeport in Walton County. This East Fork Magnolia Creek site (STORET # 32010032) 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 improved and passed with a BioRecon Score of 7 out of 10, indicating a healthy condition.

Biometrics	Metric Score
# TOTAL TAXA	0.55
# EPHEMEROPTERA TAXA	0.83
# TRICHOPTERA TAXA	1
# LONG-LIVED TAXA	0.7
# CLINGER TAXA	0.52
# SENSITIVE TAXA	0.47
TOTAL METRIC SCORE :	4.07
/ Correction Factor :	0.6
= BIORECON SCORE :	7

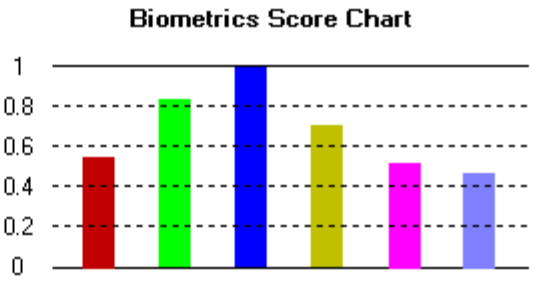
EAST FORK MAGNOLIA CREEK ABV CULVERT ON 1ST AMER FRM AKA OWLS HEAD FARM RESTOR

BioRegion : Panhandle West

Sample Date : Jan 11, 2005

Pass 6 - 10

Fail 0 - 5



During the 2003 pre-restoration biomonitoring, the site failed to meet all three biometrics in use before June 2004 to indicate an impaired condition. The stream's aquatic wildlife diversity and community structure improved substantially after restoring natural hydrology and reducing sedimentation. The mayfly (Ephemeroptera) taxa increased from 2 to 10 and the caddisfly (Trichoptera) taxa increased from 2 to 8. Total taxa doubled from 17 to 34. The sensitive taxa (Florida Index) score improved from 4 to 26. Pollution tolerant taxa no longer dominated the aquatic benthic community. Rare clean water indicators, such the armored mayfly (*Baetisca rogersi*), were now found. Sensitive fish, such as darters and shiners, were now observed instead of the ubiquitous mosquito fish found in 2003. The habitat assessments score improved to 61% from a poor 23% rating. Substrate diversity score improved to suboptimal 12 points, up from a poor score of 1. Substrate availability recovered to suboptimal score of 13 from a poor score of 1. Water velocity increased to an optimal 16 from a poor score of 1. Habitat smothering was reduced, increasing the score to a marginal 9 from a poor score of 1. Bank stability was restored to suboptimal 7 from a poor score of 3.

Conclusions

After restoration, the East Fork Magnolia Creek site above the road 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 sinuous stream channel, water velocity, and vegetated slopes. This provided appropriate habitat to allow re-colonization of the native aquatic community found in East Fork Magnolia Creek. Further improvements are expected over time as the riparian zone forest is re-established to provide shade (to reduce water temperature), aquatic habitat (logs, limbs, twigs, leaves, roots), terrestrial habitat (for emerging adult insects and egg laying sites), and filter runoff. Stoneflies, the best indicator of water quality for panhandle streams, are expected to return as the streamside forest recovers. Three stonefly species were found during a BioRecon on the same date in the stream reach just below the road.

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