A site map can be viewed by clicking on the report site name.

EcoSummary

East Fork Magnolia Creek below culvert on Owls Head Farm
February 20, 2003

FLORIDA AMBIENT

SUSPECT

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

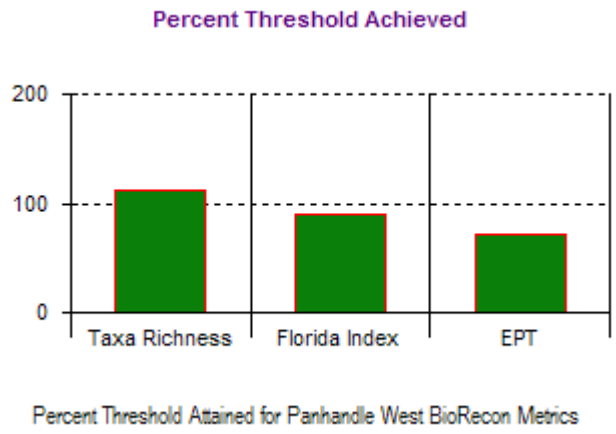


This biological assessment was conducted in support of a request by the United States Fish and Wildlife Service (USFWS) for their Ecosystem Restoration Project in East Fork Magnolia Branch. Road fill and an improperly placed culvert, which impounded Magnolia Creek's headwaters, dammed the stream. Sediment runoff from dirt roads and bare soils along the slope above the stream, as well as hydrological modification from the dam affected the watershed's health. The USFWS has initiated a restoration project in East Fork Magnolia Creek that will include restoring the sinuous stream channel and re-planting denuded slopes. This BioRecon documents the pre-restoration benthic invertebrate community's condition in East Fork Magnolia Creek. 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. 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 and Discussion

This East Fork Magnolia Creek site failed two of three biometrics to indicate an impaired condition.

Biometrics	Value	Threshold
Taxa Richness	27	>= 24
Florida Index	20	>= 22
EPT	12	>= 17



The stream's benthic community structure was altered by the dam. The filter feeding blackflies and caddisfly *Hydropysche* dominated the sample. Normally leaf shredding stoneflies (*Leuctra*) and the caddisfly *Diplectrona* are most common in the low order panhandle streams. Stoneflies, the best measures of stream health were absent. The habitat assessment score of 54% rated low suboptimal, mainly due to lack of available substrate (7%) caused by sediment smothering 93% of stream habitat. Sediments filled the stream channel and caused braided conditions (0.1 to 0.3 meters depth up to 15 meters in width). Much of the sediments appear to be from a dam failure(s), in addition to the watershed's dirt road erosion in sloped areas. The watershed has a history of large-scale spray irrigation/fertilization practices that used groundwater to water crops that border East Fork Magnolia Creek. High nitrates (5.2 mg/l 1972) were found during United States Geological Survey water quality monitoring of these irrigation/fertilization practices. Magnolia Creek is a tributary to Lafayette Creek, which is listed for biological impairment and pathogens (coliform bacteria) on the Florida 303d list for impaired waters for Total Maximum Daily Load Development.

Conclusions

The East Fork Magnolia 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. Sediments from the dam and dirt roads are the major source impacting stream health. The sediments caused scouring and smothering of aquatic wildlife habitats in East Fork Magnolia Creek. The USFWS stream restoration project should control the sediment sources and restore the natural hydrological conditions to improve Magnolia Creek's health. A post-restoration bioassessment will be made to confirm the expected return of a healthy population of stream wildlife. There might be a potential source of fertilizer and pesticide/herbicide impact if intensive agriculture is again practiced with chemical addition and large-scale irrigation. However, South Walton Utilities has a well field for the area's potable water supply within the watershed and pesticide and other chemical application would not be the appropriate best management practice to protect the drinking water supply.

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