EcoSummary

Riley Branch below North River Road near Riley Landing

August 11, 1999

IMPAIRED

NPS BIOASSESSMENTS

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

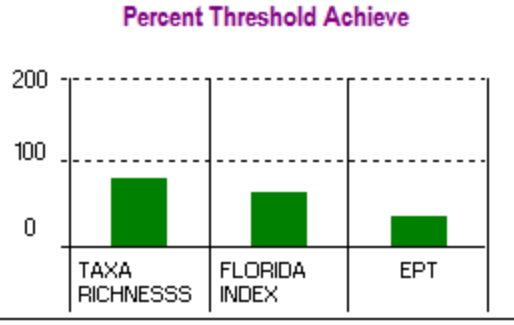


A BioRecon was performed at this site to assess the impacts to its biota and wildlife habitat from a dirt road ford crossing "Riley" Branch. This bioassessment was a partnership with the Blackwater River State (BRSF) and the Gulf Plain Ecosystem Partnership (GCPEP). The BRSF had planned to close this section of North River Road because of severe erosion caused by four-wheel drive recreational vehicles. A panhandle four-wheel drive club used this site for "mudding/mud bogging". A photograph on the club's website showed one of their member's vehicle stuck in the stream over its hood. A bioassessment was planned to monitor expected improvement to stream health after road closure and the site re-vegetated. "Riley" Branch (STORET 33030107) at the bioassessment site (N30 43 9.4 W86 48 33.4) is second order tributary to the Blackwater River, which is classified as Outstanding Florida Waters (OFW) under the State Water Quality Standards. The Blackwater River flows into Pensacola Bay via Blackwater and East Bays. The Yellow River Marsh along Blackwater Bay is a State Aquatic Preserve and also listed as an OFW. The Blackwater River State Park is located just over 3 miles downstream. "Riley" Branch drains the southern pine plains and hills of subecoregion 65f .

Results and Discussion

The BioRecon indicated an impaired biological community. All three biological indicators failed thresholds established for healthy aquatic ecosystems.

Biometrics	Value	Threshold
TAXA RICHNESS	19	>= 24
FLORIDA INDEX	14	>= 22
EPT	6	>= 17



Values and Percent Threshold Attained for Panhandle West BioRecon Metrics

"Riley" Branch's biometric values were considerably lower than those at Coon Camp Branch and Wolftrap Branch, which also have North River Road fords. The dirt road used for "mudding" activities at "Riley" Branch was the main source of the 97% of sediments that smothered the stream's fish and wildlife habitats. A turbidity value of 108 FTU below the road, compared 2 FTU above the road, was a violation of State Water Quality Standards. Another impact was livestock under a BRSF range lease using the stream, as evidenced by observed hoof prints and cow "patties". Range cattle were observed downstream in "Riley" Branch and the Blackwater River. Since cattle were unexpectedly observed the previous day in Wolftrap Branch, coliform bacteria sample bottles were brought to monitor "Riley" Branch. Both total coliform (7500/100ml) and fecal coliform (600/100ml) bacteria were in violation of State Water Quality Standards. The County Health Department had periodically posted no swimming at the Blackwater River State Park because of elevated fecal and total coliform bacteria concentrations from an unknown upstream source. Park officials had not been aware that cattle had access to State Waters in the BRSF just above the State Park because livestock Best Management Practices (BMPs) such as fencing were not employed. BRSF have since had the cattle removed from its lands upon notification of the problem, which reduced coliform bacteria loading to the River. This effort restored water contact recreation activities for the public downstream at the State Park. The dissolved oxygen (DO) concentration (4.1 mg/l) was in violation of State Water Quality Standards. The elevated water temperature (28.3 degrees centigrade) contributed to the low DO, as did the impoundment and organic loading created by the "mud bogging" and cattle presence. Burning and cutting the riparian zone forested wetland allowed thermal effects from sunlight to increase stream temperatures by 5.6 degrees compared to Coon Camp Branch (22.7 degrees). The habitat assessment rated marginal with a score of only 43% due to poor conditions for Substrate Availability, Habitat Smothering, Riparian Buffer Zone Width for both banks, with marginal conditions for Bank Stability and Riparian Zone Vegetation Quality on both banks. Water Velocity and Substrate Diversity rated suboptimal and Artificial Channelization rated optimal. Impacts from the dirt road were the main reason for the low habitat assessment score. However, lack of BMP's for livestock and silviculture in "Riley" Branch's riparian zone corridor negatively affected scores for Riparian

Buffer Zone Width and Riparian Zone Vegetation Quality. The buffer zone width was only zero to two meters wide as the result of four-wheel drive "mudding" and fire management burning to the stream bank. The riparian vegetation quality was limited because cutting/burning the forested wetlands reduced the stream canopy cover. This resulted in the dominant vegetation being shrubs and non-woody macrophytes, the grasses and forbs preferred by livestock.

Conclusions

This "Riley" Branch site did not meet Class III State Water Quality Standards 62-302 for recreation and propagation and maintenance of a healthy well-balanced population of fish and wildlife. The main cause was vehicle traffic driving across the stream. The "mud bogging" four-wheel drive vehicles silt-smothered fish and wildlife habitat and created a turbidity violation of State Water Quality Standards. Burning/cutting of the "Riley" Branch's riparian buffer zone reduced fish and wildlife habitat availability and reduced canopy cover, which increased water temperature. The reduced stream shading that increased thermal loading, the impounding, and the organic loading caused by "mud bogging" vehicles created a DO violation of State Water Quality Standard. Livestock in the stream generated a potential health hazard with State Water Quality Standard violations and restricted downstream recreation in the State Park. The "Riley Branch's location in the Blackwater River State Forest has the potential to afford managerial riparian forest protection. Stream corridor management should include maintaining an undisturbed riparian buffer zone width of at least 18-meters that prevents burning, logging, and vehicles from driving in the stream. These management activities would facilitate the restoration and preservation of "Riley" Branch. Closing North River Road at this site would enhance the stream reach's fish and wildlife population, in addition to limiting sediment and organic loading to the Blackwater River. Navigation in the Blackwater River downstream has been impeded by sedimentation filling the channel affecting recreation activities and canoe livery businesses. The post-road closure bioassessment has not been performed as of July 2005. Continued erosion caused by four-wheel drive vehicles ignoring signs and bypassing or removing/destroying road closure devices had defeated restoration efforts as of July 2005.

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Published by the Florida Department of Environmental Protection
Tallahassee, Florida
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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