EcoSummary

FLORIDA AMBIENT

HEALTHY

Mare Creek Below East River Road Bridge

February 19, 2004

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

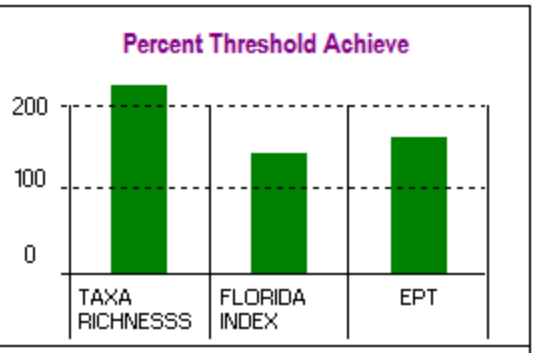


A BioRecon was conducted to monitor the biological health of Mare Creek after completion of a Blackwater River State Forest (BRSF) stream restoration project. This bioassessment was conducted in partnership with the BRSF and the Gulf Coastal Plain Ecosystem Partnership (GCPEP). BRSF received a Section 319 federal grant through the Florida Department of Environmental Protection to replace a dirt road ford through Mare Creek with a bridge across the creek and riparian zone. The pre-existing East River Road ford had caused clay and sand sedimentation in Mare Creek, which had resulted in smothering fish and wildlife habitat. Replacing the stream ford with a bridge was designed to reduce sediment impacts to waters within the Pensacola Bay basin. Mare Creek, a fourth order stream at the sample reach (STORET # 33030109) drains the Southern Pine Plains and Hills subecoregion 65f. The sample site (Latitude 30 degrees 54 minutes 14.8 seconds North, Longitude 86 degrees 42 minutes 59.1 seconds West) is located about 8 miles northwest of Crestview. Mare Creek is a tributary to the Blackwater River, which is classified as Outstanding Florida Waters (OFW) under the Florida Water Quality Standards. The Blackwater River flows into Pensacola Bay via the Blackwater and East Bays. The Yellow River Marsh Aquatic Preserve, also listed as an OFW, is located along Blackwater Bay.

Results

The BioRecon indicated a healthy biological community. All three biometric indicators greatly surpassed thresholds established for healthy aquatic ecosystems.

Biometrics	Value	Threshold
TAXA RICHNESS	53	>= 24
FLORIDA INDEX	31	>= 22
EPT	27	>= 17



Values and Percent Threshold Attained for Panhandle West BioRecon Metrics

During the February 2000 pre-restoration monitoring, the site failed one of the three biometrics and had limited production of stream invertebrates because of habitat smothered by sediment.

EPT (mayflies, stoneflies, caddisflies) are the strongest measure of stream health that declines in relation with human disturbance. The EPT's number of individuals was now abundant after reducing sediment runoff. This abundance of clean water indicators was a reflection of the excellent coverage of substrate available (94%) as productive habitat. This included 36% woody debris, 15% leaf pack/mat, and 43% undercut banks/roots substrate. The habitat assessment rated an optimal 88% with most parameters optimal (substrate availability, water velocity, habitat smothering, artificial channelization,) except suboptimal scores for substrate diversity, and left bank ratings of bank stability, riparian zone buffer width, and riparian zone vegetation quality. The site's habitat rated excellent after minimizing the East River Road's sediment runoff. The riparian zone was a mature Atlantic white cedar forest with mountain laurel under-story, which now are rare in Florida. The riparian forest provides shade (to reduce water temperature), aquatic habitat (logs, limbs, twigs, leaves, roots), terrestrial habitat (for emerging adult insects and egg laying sites), and filters runoff, which sped recovery of the reach's fish and wildlife. The sample reach's mature riparian forest provided more woody debris stream habitat than found in the typical panhandle sites. The 36% coverage of snags and logs at this stream site approached that reported by the University of Georgia studies. Research by J.B. Wallace and A.C. Benke found around 40% woody debris in relatively unaltered Southeastern Coastal Plain streams. Wood habitat is the major stable substrate in area sand-bottom streams and the site of high invertebrate diversity and productivity. Wood is also important to fishes, providing cover and habitat as well as habitat for an abundant invertebrate food source. Most Florida panhandle streams now have less than 10% woody debris habitat because of the historical logging and modern silviculture practices.

Conclusions

This Mare Creek site surpassed 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 because of the BRSF restoration work protecting it from East River Road runoff. The Mare Creek site's stream health was rapidly restored after minimizing road sediment runoff by eliminating the road ford with the installation of a metal Bailey bridge. Mare Creek's location in the Blackwater River State Forest afforded its mature riparian forest protection from cutting, which facilitated the restoration of Mare Creek. This restoration project enhanced the stream reach's fish and wildlife, in addition to improving recreational opportunities along the Wire Grass Hiking Trail that crosses the Mare Creek in the sample reach.

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