EcoSummary
BioRecon Report

Bear Creek below Interstate 10 near Mile Marker 78, Walton Cou
October 3, 2000

BioRecon: A rapid, cost-effective screening mechanism for identification of biological impairment

Purpose

A bioassessment was performed at this site on Bear Creek to assess the impacts of historic clay pit mining on its biota and wildlife habitat. This bioassessment was in technical support of a partnership with the U. S. Geological Survey and U.S. Fish and Wildlife Service. The Northwest District Biological staff also was tested on FDEP biological assessment standard operating procedures for Quality Assurance by Tallahassee FDEP personnel at this location.

Background

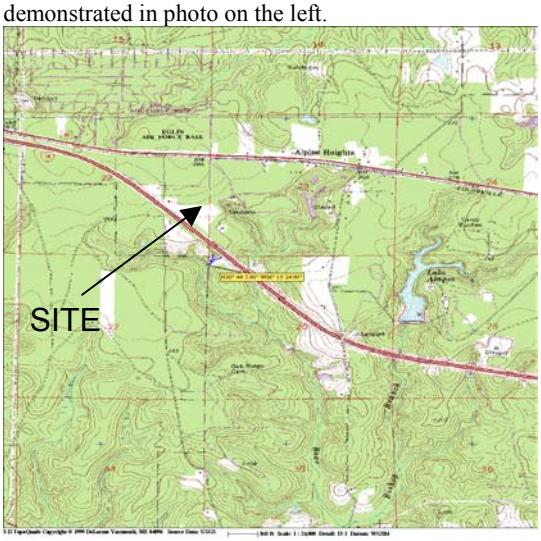
Bear Creek at the bioassessment site is a second order stream, originating along I-10), (Lat. 30° 44' 5.9" Long. 86° 13' 24.9") about 4 miles west of DeFuniak Springs. Bear Creek flows into Choctawhatchee Bay via Alaqua Creek and Bayou. This site drains the Southern Pine Plains and Hills of subecoregion 65f.

Results

The BioRecon indicated an impaired biological community. All 3 biological indicators at Bear Creek failed thresholds established for a healthy aquatic wildlife community:

Biometrics	Values	Thresholds
Taxa Richness	16	≥24
Florida Index	8	≥22
EPT	3	≥17

The stream community was severely limited by sediments from the severely eroded hillsides in its headwaters. These sediments smothered almost 100% of the aquatic habitats, which eliminated the stream's wildlife diversity and productivity. Sediments filled the stream channel to a depth of at least 1.5 meters in the upper sample reach. This left a water depth averaging less than 0.02 meters, much too shallow to support a fish population. The creek was severely braided from sediments filling the stream channel. Iron bacteria were common and iron is a contributor for red tide blooms in marine waters. Erosion and smothering from the hillside sediment runoff had killed much of Bear Creek's wetland forest riparian buffer zone. These buffer zones provide the shade, food, habitat (woody debris/leaf fall/roots) and filtration necessary for the continued propagation of Creek's biota. Mountain Laurel now rare in North Florida was still present in non-eroded hillside area. The western panhandle of Florida experiences severe erosion. Soft sandy soil, intense rainfall, and steep topographical relief make Bear Creek highly susceptible to erosion after removal of vegetative cover. Note the obvious example demonstrated in photo on the left.



Significance

This Bear 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. The sediment effects from the gully erosion contributed to this stream not meeting State designated use. Sediment deposition almost completely smothered habitat, impairing the stream's fish and wildlife nursery function. Habitat smothering from sedimentation and water pollution from the hillside sediment runoff negatively affects the Choctawhatchee Basin's fish and wildlife. During rainfall events turbidity, iron and sediment pollution loads is transported to Alaqua Creek, Alaqua Bayou, and Choctawhatchee Bay. During the summer of 2000, Choctawhatchee Bay experienced fish kills including juvenile gulf coast sturgeon, an endangered species, attributed to a red tide bloom. Shading from turbidity and sediment smothering destroy seagrass and oyster reef nursery areas in downstream estuarine waters. A downstream reference site on Alaqua Creek has changed from a gravel and coarse sand bottom to a fine silt and sand dominated substrate during the past 10 years of monitoring.

Suggestions

Restore the stream's natural hydrology (i.e. depth/width ratio), maintain a >18 meter riparian forest buffer zone and eliminate sediment runoff to allow the watershed's fish and wildlife habitat (woody debris, leaf packs, undercut banks, roots, and aquatic vegetation) to return. However, first the former borrow pit used for the construction of Interstate 10 should be stabilized and replanted with native streamside vegetation including mountain laurel. Also, the highway runoff, which caused the gully erosion, needs to be directed into sand filters simulating rainfall percolating through the area's hillsides forming headwater springs of local streams. **For more information, contact Donald Ray, FDEP Northwest District, 160 Governmental Center, Pensacola, FL 32501 (850) 595-8300 x1126 or SC 695-8300**