EcoSummary

BioRecon Report

Mt. Sinai Branch above Eglin Road 412, Walton County
August 10, 2000

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

Purpose

A bioassessment was performed at this Mt.Sinai Branch site to document its biota and wildlife habitat for Eglin Air Force Base's watershed monitoring project. The BioRecon was a quality assurance comparison conducted to assist the Base's Jackson Guard stream biomonitoring program.

Background

Mt.Sinai Branch at the bioassessment site (Lat. 30° 39' 53.0 " Long. 86° 21' 54.2") is a second order stream originating in steepheads south and east of County Road 280, west of DeFuniak Springs. Mt. Sinai Branch flows into Choctawhatchee Bay via Exline Creek, Rocky Creek and Rocky Bayou. This site drains the Southern Pine Plains and Hills subecoregion (65f).

Results

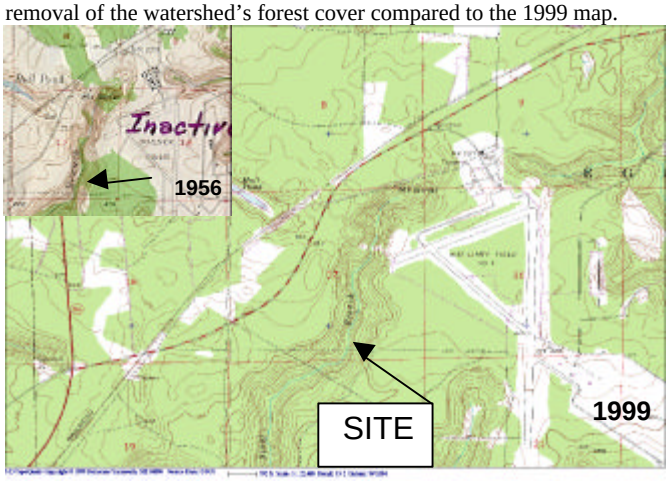
The BioRecons indicated a healthy to suspect biological community. In the FDEP samples, all 3 biological indicators passed thresholds established for a healthy aquatic wildlife community. While Eglin passed 2 of 3 thresholds, falling short on the clean water indicators:

Biometrics	DEP Values	Eglin Values	Thresholds
Taxa Richness	33	39	≥24
Florida Index	28	20	≥22
EPT	19	23	≥17

Lack of habitat from a sediment filled channel limited fish and wildlife productivity in this stream reach. A depth of only a few inches prevented fish larger than mosquito fish (no darters or shiners observed) from inhabiting this stream reach. The stream's sediment filled pools and its average depth of only a few inches precluded most fish propagation. Stream habitats were smothered by sand/silt (97%) from historical silvicultural practices and probably erosion from the inactive Wagner Field's runoff. The Road 412 culvert and fill material used to span the stream and riparian zone acted as a dam to exacerbate the smothering. Mt.Sinai Branch was over 18 meters wide above the culvert crossing as a result of the hydrologic modification.. The undersized culvert (0.5 meter diameter) in effect dammed the stream. This flooded the riparian zones, killing or stunting the trees. The paved road approach had eroded to form 2 gullies at the culvert crossing. Fire had burned to both stream banks and the remaining stunted riparian trees and shrubs provided little shade and habitat cover.

Significance

This Mt.Sinai Branch site met interim biometric thresholds for 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. Nevertheless, previous land management practices had caused hillside erosion, which led to historical sedimentation. This eliminated habitat, which limited Mt.Sinai Branch's fish and wildlife nursery function, potentially affecting the federally listed endangered Okaloosa Darter found in Rocky Creek's drainage. The western panhandle of Florida experiences severe erosion. Soft sandy soil, intense rainfall, and steep topographical relief make this area highly susceptible to erosion after removal of vegetative cover. The riparian zone canopy cover before human disturbance was an Atlantic white cedar type forest. A mature forest of this type provides streams with abundant habitat from decay resistant cedar logs. Fallen logs create deep narrow channels stabilized by roots with riffles and pools, an ideal panhandle stream habitat. The forest cover's leaf fall and smaller woody debris provides food creating an optimal situation for propagation of a well-balance population of fish and wildlife. The USGS 1956 Niceville quadrangle (see insert) indicated considerable removal of the watershed's forest cover compared to the 1999 map.



Suggestions

Removing road fill and replacing with a bridge spanning Mt.Sinai Branch and its floodplain would help restore the stream's natural morphological characteristics. Adding habitat such as large woody debris, along with stream bank protection and channel restoration would enhance fish and wildlife productivity and diversity. Proper placement of large pine logs along the stream bank would enhance riffle/pool habitat (velocity and depth) for the darters and other stream wildlife. Riparian buffer zones greater than 18 meters should be maintained. The buffer zones provide the shade, food, habitat (woody debris/leaf fall) and filtration necessary for the propagation of Mt.Sinai Branch biota. Restoring the stream's natural hydrology (i.e. increase depth/width ratio) and riparian forests buffer zones (replanting native Atlantic white cedars, allowing streamside native tree growth) would benefit the watershed's fish and wildlife including the endangered Okaloosa darter. **For more information, contact Donald Ray, FDEP Northwest District, 160 Governmental Center, Pensacola, FL 32501 (850) 595-8300 x1126 or SC 695-8300**