



EcoSummary

BioRecon Report



Rattlesnake Head Spring Bonnet Road, Washington County January 31, 2002

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

Introduction

A bioassessment was performed at this Rattlesnake Head site as a potential biota and wildlife habitat comparison to Little Reedy and Sodom Branches located downstream of Washington County's Mudhill landfill. This bioassessment was in technical support of a compliance action by the FDEP Northwest District's Waste Management Cleanup Section. Rattlesnake Head at the bioassessment site is a first order stream, originating just west of Bonnet Road, less than 3 miles southwest of Wausau, Washington County (Lat. 30° 36' 14" Long. 85° 37' 52"). This steephead slope stream was sampled at its spring discharge from the ground to 100 meters downstream. Rattlesnake Head flows into Choctawhatchee Bay via Pippin Mill Creek, Holmes Creek and Choctawhatchee River. Rattlesnake Head drains the Dougherty/Marianna Plains of subecoregion 65g.



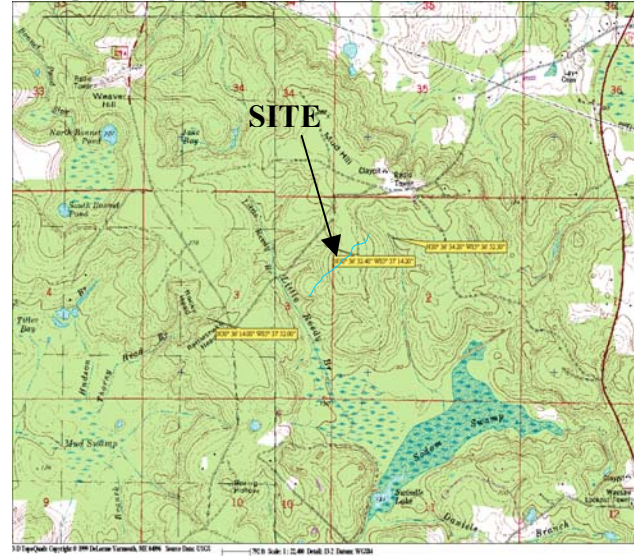
Results and Discussion

The BioRecon indicated anthropogenic impairment to the stream biological community. Two of 3 biological indicators failed thresholds established for a healthy aquatic wildlife community:

Biometrics	Value	Thresholds
Taxa Richness	32	≥24
Florida Index	15	≥22
EPT	13	≥17

The stream biological community and habitat assessment (67% lower sub-optimal rating) were impacted by sediments from silviculture practices. Heavy equipment had driven down the steephead beech-magnolia forest slope and harvested large hardwoods and pines a meter from the stream (see upper left inset). Rare Ashe magnolia and Stewartia (native camellia) were observed at this site. Historic sediments filled the lower half of the 100-meter sample site (40 of 80 square meters of habitat area). While the upper 50 meters had adequate aquatic habitat, the lower 50 meters were completely filled with eroded sediment, thus smothering 50% of the potentially available aquatic habitat. This smothering, plus the isolation of the upstream segment, reduced the stream's wildlife diversity and productivity. This translates to a loss of wildlife productivity downstream in Pippin Mill Creek, Holmes Creek, Choctawhatchee River, and Choctawhatchee Bay. Limited

macroinvertebrate productivity in the watershed reduces potential fish catch to recreational and commercial anglers. The dissolved oxygen (DO), pH, and specific conductance concentrations coming directly from ground at Rattlesnake Head were 6.14 mg/l, 4.4, and 28 umho/cm respectively. Acute toxicity test screening of Rattlesnake Head found 100% mortality at 24 hours in both water fleas and bannerfin shiners. However the pH adjusted sample had 100% and 95% survival of the water fleas and fish. Test organisms used for acute toxicity tests are cultured in water that reflect the required pH levels in effluent of surface water dischargers, typically 6.5-8.5 s.u. These test organisms might not be adaptable to the naturally occurring low pHs often found in streams in northwest Florida. Another possible explanation is pesticide application as an upland sand pine plantation had just been clearcut and may have been sprayed to prepare for replanting.



Conclusions

The Rattlesnake Head 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 sediments from silviculture practices contributed to this stream not meeting State designated use. Sediment deposition, smothered wildlife habitat, and possible toxicity impaired the stream's fish and wildlife nursery function. Sediment runoff negatively impacts Pippin Mill Creek, Holmes Creek, Choctawhatchee River, and Choctawhatchee Bay's fish and wildlife. Habitat smothering, sediment loading and limited macro benthos populations could affect downstream fishing opportunities and possibly the federally endangered gulf sturgeon, which inhabits the Choctawhatchee River System. Maintaining larger stream buffer zones would reduce sediment loading to State Waters that is filling the site's natural springs. Restoration of the stream's natural hydrology (i.e. flow, depth) and preserving the beech-magnolia slope forest buffer zones would benefit the watershed's fish and wildlife. **For more information, contact Donald Ray, FDEP Northwest District, 160 Governmental Center, Pensacola, FL 32501 (850) 595-8300 x1126 or SC 695-8300**