



EcoSummary

Juniper Creek at SR 83, Walton County
August 10, 1998



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

Purpose

A bioassessment of Juniper Creek was conducted to determine the macroinvertebrate community structure and health of this tributary of West Sandy Creek, part of the Choctawhatchee River basin. Also, this BioRecon compliments assessments done on Juniper Lake, an impoundment in this watershed.

Background

Juniper Creek, a spring-fed 2nd order stream of West Sandy Creek is located in Walton County. The headwaters are in the vicinity of the southeast area of Juniper Lake. The primary land use in the watershed is silviculture with residential areas a distant second. Most of the stream above state road (SR) 83 is unconfined, a wetland. This stream discharges into West Sandy Creek near Old Landfill Road. Old Landfill Road is unpaved and a significant source of clays in the watershed, particularly West Sandy Creek. This stream receives the direct overflow from Juniper Lake, an impoundment with moderate residential density around the circumference. This impoundment has been culturally enriched; the likely sources are primarily fertilization of lawns and septic tanks.

Results

Limited physicochemical parameters were measured at the stream using a Hydrolab multiparameter probe, in situ. Those data were normal for streams in this region of the western panhandle. Of particular interest, the dissolved oxygen was good at 6.7 mg/L. The assessment consists of eight components and is divided into two principle parameters, primary and secondary. The primary parameter components consider in-stream habitat quality, quantity, stability and current. The primary parameter components were evaluated "suboptimal," corresponding to a 66 % score. The most severe impact to this stream is probably sand and clay smothering and so was rated "marginal" for the category habitat smothering. Many roads in this vicinity are unpaved and have long grades coming off hills to the stream valleys. Probably the single greatest threat to biological integrity of streams and many lakes in the panhandle is sedimentation. The secondary parameter components consider ancillary factors, for example, quality and quantity (depth) of riparian vegetation, bank stability and possible human alterations of stream morphology. The secondary habitat parameter components were rated as

"optimal," corresponding to an 85 % score. The lowest rated component was "bank stability" of the left bank. This component scored in the "marginal" category due to bank failure about 70 m downstream from the starting point. The overall habitat scoring of the 100 m (328 ft) stream reach in this bioassessment resulted in a score of 76 %. The macroinvertebrate community reflected the overall good quality of habitat and water. Two of three metrics used to determine stream health passed. Total EPT (mayflies, stoneflies and caddisflies) taxa were 16, failing to meet the minimum passing criterion by one taxon. Of those 16 taxa, one-third was stoneflies. As a group, the EPT are considered sensitive to human induced pollution, particularly nutrification. Thirty-four taxa were present in the assessment and 29 of those taxa were on the Florida Index list. The Florida Index is a biotic index that ranks taxa according to their sensitivity to pollution, particularly from nutrient enrichment and related ramifications. The trophic (eating) structure of this macroinvertebrate community was diverse, represented by shredders, scrapers, filterers, predators and scavengers.

Significance

The BioRecon indicates that overall this stream is in relatively good condition; however, the EPT metric did fail to pass by one taxon. This raises a "flag" indicating more pronounced pollution effects may arise if corrective steps are not taken. This stream is located below an impoundment that has changed some physical and chemical qualities of the stream. The forested wetland contributes a significant buffering capacity to the upper half of Juniper Creek by physically reducing erosion and in the uptake of nutrients. Movement of clay and sand from the surrounding land into the stream channel is the impact of concern as determined by the BioRecon. These data also add specific knowledge of the condition of watersheds in the Northwest District.

Suggestions

While conducting a ground truthing survey of the immediate watershed, it was apparent dirt roads contribute significantly to the sedimentation problem of the stream. The major problem comes from erosion on the hilltops and down into the stream; however some lateral sediment movement does contribute to the loading. Outside of paving these roads entirely, paving from hilltop to hilltop where the road crosses the stream would significantly reduce that source of sediments. A passive best management practice (BMP) is to allow the riparian vegetation and wetlands remain intact. Without that buffer, the stream would soon fill in and lose its natural physical characteristics that are important to a healthy biological community.

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