



# EcoSummary

Moccasin Creek, Bay County  
September 16, 1997



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

## Purpose

A bioassessment of Moccasin Creek was conducted to determine possible impacts on the watershed and the Deer Point Lake/Econfina Creek basin in particular. This watershed is of interest since it is the drinking water source for a good portion of Panama City-Bay County population. One of the Northwest District's reference streams, South Fork Bear Creek, is in this basin. Thus, this system is of great interest



concerning human health. The last bioassessment was a comprehensive study of the Deer Point Lake basin conducted over a one year period in 1990-1 by Florida Department of Environmental Regulation (FDER) (1992), now Florida Department of Environmental Protection.

## Background

Moccasin Creek is located in northeast Bay County near the town of Econfina. This is a 3rd order tributary of Econfina Creek. It flows generally westerly for about 8 km (5 mi) through land that is primarily used for silviculture. The lower one-fourth of the watershed is relatively natural with mixed hardwood/conifer upland forest. No known point source pollution threatens the watershed; however, non-point source threats from septic tanks, silvicultural management practices and sedimentation/siltation from dirt roads exist. This stream was moderately shaded with a well-vegetated riparian zone primarily composed of hardwoods with some pine on the drier sites. Trees of note included: American beech; water oak; bay magnolia; dogwood; and American holly.

## Results

Over the 100 m (328 ft) reach (from SR 167 eastward) this stream was characterized by good velocity (1 ft/sec) and a good riparian zone; however, sedimentation was clearly a problem with the stream depth relatively uniform with pools infrequent and shallow. Chemical (dissolved oxygen, pH and specific conductance) data were within the expected range for a stream of good water quality in this area. These data corresponded to those collected in 1990-1 (FDER, 1992). The habitat assessment rated 81 % overall. This assessment is divided into two subsets, the primary habitat assessment, which deals with in-stream components that are directly related with microhabitats and water velocity. These parameters had an average rank of suboptimal (the 2nd highest ranking). However, water velocity rated "optimal," while habitat smothering was "marginal." The secondary habitat assessment averaged in the "optimal" range for all components. This was due to the good riparian zone and channel stability that the plant community provides. All three metrics met or surpassed minimum thresholds for community health. Thirty-five taxa were identified in this assessment; all major orders of aquatic insects were represented. This community diversity reflected the complex trophic structure of the system and adequate, stable habitats. The EPT (mayflies, stoneflies and caddisflies) group had 17 taxa with mayflies being the most diverse of the group. The EPT, as a group, are considered sensitive to human caused pollution, particularly nutrification. Three taxa were stoneflies and one (*Acroneuria* spp.) was abundant. It should be noted sampling occurred during drought conditions when the stream was at base-flow.

## Significance

Biologically and chemically the stream was "healthy," but not without problems. However, some of the findings directly show the sources of the sedimentation that is impacting Deer Point Lake. All lakes (reservoirs) eventually fill with sediments and organics as they age; it is happening to Deer Point Lake at an accelerated rate. The watersheds must be stabilized to slow the erosion rate.

## Suggestions

Moccasin Creek can be improved by best management practices (BMP) by all involved in activities that disturb the soil in the watershed. Maintenance of a naturally vegetated buffer zone near the stream and allowing felled timber and other debris to remain streamside helps impede soil and sand loss during heavy rainfall. Dirt roads are a continuous source of heavy sedimentation in panhandle streams. Placing asphalt on the roadbed from hill to hill where the road crosses the stream would significantly reduce the sediment loading to streams. A more economical treatment would be to gravel these areas; a possible concern is the increase of pH from limestone during rain. The small temporary increase in pH (granite would probably be cost-inhibiting due to transportation) would be innocuous compared to the compounding effects of clay and sand loading.

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