



EcoSummary

Tomoka River at Eleventh Street, Volusia
County

September 9, 1996 - August 31, 1998



Stream Condition Index (SCI): The standardized biological assessment tool used by FDEP biologists to indicate ecosystem health and identify impairment as compared to reference (natural) conditions of streams within the various ecoregions of Florida.

Purpose

The Tomoka River at 11th Street has been sampled for a number of years as a biological reference site because this area of the river is relatively natural and unaltered by pollution. Data obtained from sampling reference sites is used to compare with other sites and is essential for the development of biological criteria. Continued monitoring of the Tomoka River is especially important, since it has been designated an Outstanding Florida Water.

Background

The Tomoka River originates in wetlands just south of the junction of interstates 4 and 95 several miles west of the city of Port Orange in Volusia County. From there it flows generally NNW for about 10 miles before turning to the northeast. The sampling site at Eleventh Street lies within this section. After veering to the northeast, the river becomes brackish and eventually tidally influenced. It meets the Halifax River (an estuarine lagoon) at the area known as the Tomoka Basin. Land use in the 76.8 square mile portion of the Tomoka River drainage upstream of the sampling site is 75% natural uplands and wetlands. Approximately 21% is urban development. The remaining 4% is devoted to agriculture and rangeland.

Results

This report summarizes the results of sampling carried out in September 1996 and August 1998. The ecological health of this stream was assessed using the Stream Condition Index (SCI) and physical and chemical measurements of water quality. The SCI found the Tomoka River at 11th Street to be in excellent biological health, achieving a "very good" ranking on both sampling dates. There was a total of 32 different macroinvertebrate taxa collected on 9/9/96, and an impressive 49 taxa were found on 8/31/98. On both occasions, seven taxa were members of the pollution-sensitive EPT group, which includes larval mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera). The Florida Index -- a measure of the health of the macroinvertebrate community based on the number of pollution-intolerant species present -- showed a score of 17 in 1996 and 22 in 1998. In the earlier

sample, the dominant taxon present in the sample (32% of individuals) was the riffle beetle *Microcyloepus pusillus*. In 1998, the dominant taxa were snails of the family Hydrobiidae and the amphipod *Hyaella azteca*. Each represented approximately 23% of the sample. Physicochemical measurements were all within normal ranges for this stream. Dissolved oxygen levels were low on both occasions (4.7 mg/l in 1996 and 3.8 mg/L in 1998), but these substandard levels are natural in darkwater streams originating in swamps. The conductivity was somewhat high for darkwater streams, but the presence of relict salt deposits in the coastal soils is probably responsible for this. All nutrients were at medium or low levels. The fecal coliform bacteria count was fairly high in 1996 (340 colonies/100 mL), but not in violation of state water quality standards. Fecal coliforms were not sampled in 1998. Habitat assessment scores were almost identical on both sampling dates, ranking the site in the optimum category for habitat quality and quantity.

Significance

These results suggest that the water quality and biological integrity of the Tomoka River have remained good up until this point. This is excellent news, given the tremendous development pressure faced by coastal areas in Florida, and the status of the Tomoka River as an OFW.

Suggestions

Continued monitoring of the Tomoka River is very important to keep abreast of the health of this unique water body. The elevated fecal coliform levels found in 1996 suggest that bacteriological testing should be included in future sampling events. Landowners in the watershed should be made aware of or reminded about the fragile and important nature of this river system, and should be encouraged to make environmentally conscious choices in any future land developments.

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Published by the Florida Department of Environmental Protection, Tallahassee, FL.

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