A site map can be viewed by clicking on the report site name.

BASIN STUDIES

EcoSummary

Tomoka River at Eleventh Street (LPGA Blvd.), Ormond Beach

August 21, 2000

EXCELLENT

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

For samples collected before June 8, 2004
All field and laboratory methods followed FDEP Standard Operating Procedures and met FDEP quality assurance/quality control standards.
For samples collected on or after June 8, 2004
All field and laboratory methods followed FDEP Standard Operating Procedures (SOPs) and met DEP quality assurance/quality control standards.

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 relatively less altered 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 Waterbody.

Watershed Characteristics

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. As of 1995, land use in the 76.8 square mile portion of the Tomoka River drainage upstream of the sampling site was 75% natural uplands and wetlands. Approximately 21% was urban development. The remaining 4% was devoted to agriculture

and rangeland. Development in the watershed is occurring rapidly, so the natural land use fraction, as well as probably the agriculture/rangeland fraction, have likely decreased in the last several years.

Results

This report summarizes the results of sampling carried out on March 7, 2000 and August 21, 2000. 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 25 different macroinvertebrate taxa collected in March, and 36 taxa were found in August. On the earlier sampling date, 4 of the taxa found were members of the pollution-sensitive EPT group, which includes larval mayflies (Ephemeroptera), stoneflies (Plecoptera), and caddisflies (Trichoptera). In August, 8 EPT were collected. 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 11 in March and 13 in August. In the earlier sample, the dominant taxon present in the sample (36% of individuals) was the caddisfly *Cheumatopsyche*. In August, the dominant taxon was the amphipod crustacean *Gammarus*, which accounted for 22% of the sample. Physicochemical measurements were all within normal ranges for this stream. The dissolved oxygen level was low (2.1 mg/L), but substandard levels like this are not unexpected in darkwater streams originating in swamps. All nutrients were at moderate or low levels. The coliform bacteria counts were low or moderate in March, but extremely elevated in August, when fecal coliforms were present at a concentration of 540 colonies/100 mL, and total coliforms at 4650 colonies/100 mL. The latter represents a violation of state water quality standards. On both occasions, the iron concentration in the water was quite high (approximately 700 ug/L). However, high iron concentrations in the surficial aquifer are natural in this part of the state, and thus elevated iron levels are normal in the Tomoka watershed. Habitat assessment scores were very similar 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 good news, given the tremendous development pressure faced by coastal areas in Florida, and the status of the Tomoka River as an OFW. However, though still quite good, the results presented here are not as good as those seen in previous sampling events. A downward trend in water quality in the Tomoka might be taking place, and should be monitored.

The very high coliform levels found in August might represent an isolated incident, or it might represent degradation of the river from a human health standpoint. (Elevated coliform bacteria levels themselves generally do not have any ill effect on the *ecological* health of the system.) This should also be monitored.

Suggestions

Continued monitoring of the Tomoka River is very important to keep abreast of the health of this unique water body. The elevated coliform levels found suggest that bacteriological testing should be included in future sampling events. Central District biologists plan to resample at the Tomoka in August 2003, and should then be able to determine if apparent declines in water quality continue to occur.

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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