BASIN STUDIES

EcoSummary

MIZNER'S BRANCH UPSTREAM OF SR40

August 23, 2000

GOOD

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



This sampling was carried out to determine the ecological health of Mizner's Branch, a tributary of the Tomoka River, an Outstanding Florida Water (OFW). This site was sampled concurrently with nine others as a part of a survey of the Tomoka River basin carried out in March and August 2000. In addition to its specific purpose, the information obtained will also be useful in the further refinement of FDEP's bioassessment protocols.

Watershed Characteristics

Mizner's Branch is a three mile long canalized stream located in northeastern Volusia County near the city of Ormond Beach. It originates in what is currently a high-density residential area (probably formerly drained wetland) and flows generally north parallel to and between Nova Road and Clyde Morris Boulevard. Beyond SR 40, it takes a turn to the northwest, and flows into the Tomoka River roughly two miles upstream of US Hwy 1. At least at the sampling site (and probably along most of its course), Mizner's Branch is a straight-sided canal almost completely full of dense growths of aquatic plants.

Land use in the 2.5 square mile watershed is largely medium- and high density residential developments, with some commercial properties and some relatively undeveloped land in the upper watershed.

Results

Biological results for Mizner's Branch were good. The SCI performed in March 2000 gave it a "very good" rating, whereas the one carried out in August rated it as "good". In March, there were 43 different macroinvertebrate taxa collected in the subsample, including three from the generally sensitive EPT group (larval mayflies, stoneflies, and caddisflies). The site earned a score of 12 on the Florida Index, which is based on the number of different pollution-intolerant macroinvertebrate taxa present. In August, there were 34 taxa collected, with 2 EPT, and a Florida Index score of 4. The most common macroinvertebrate collected in the earlier sample was the larval chironomid midge (a.k.a. "bloodworm") *Tanytarsus* sp. T (Epler), which made up 18.23% of the total number of individuals in the subsample. In the latter sample, the larval mayfly *Caenis* was dominant, at 27.19%.

Nutrient levels in Mizner's Branch were low to moderate, with the exception of total phosphorus, which was present at a high concentration. Fecal and total coliform bacteria levels were very high, measuring 1165 and 1450 colonies/100 mL of water, respectively. The latter constitutes a violation of state water quality standards. The dissolved oxygen level was 2.6 mg/L, which is below the state standard of 5.0 mg/L. The specific conductance was 559 umhos/cm, which is somewhat high, but probably normal for a system which may at times receive tidal influence. Other physical and chemical measurements were normal.

The habitat assessment performed at Mizner's Branch gave very poor results. A lack of substrate diversity, low water velocity, smothering of habitats, channelization of the stream, and alteration of the riparian zone combined to give the stream a habitat assessment score of 63 out of a possible 160 points, or 39.38%.

Significance

Taken as a whole, these results suggest that Mizner's Branch is in fair ecological health. Although the biological results seem to indicate that the macroinvertebrate community is healthy, the numbers of taxa are probably elevated due to the enormous amount of aquatic plant material present, and the habitat it provides, especially for dipteran larvae, which were a large component of the total sample on both occasions, but especially in the winter (~50%). The SCI is currently under revision, and the new SCI should more accurately assess the health of systems like this. When the biological results are combined with the high phosphorus and bacteria levels, low oxygen level, and poor habitat assessment results, the overall assessment is that the Mizner's Branch is not in great shape, but neither is it in terrible condition. As a contributor to the Tomoka River, however, the poor physical and chemical results are a concern.

Suggestions

Home- and business owners in the watershed can help to lessen the amount of phosphorus, bacteria, and other pollutants entering Mizner's Branch, and thus the Tomoka River, by reducing (or evening eliminating) the use of lawn fertilizers and pesticides, being careful with motor oil and other chemicals, and making sure that septic and sewer systems are properly maintained.

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