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

BASIN STUDIES

EcoSummary

Little Tomoka River at Breakaway Trail, Ormond Beach

August 23, 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 purpose of the bioassessments described in this report were to determine the ecological health and recovery of the Little Tomoka River after a severe wildfire event within the watershed.

The information obtained will also be useful in the refinement of FDEP's stream bioassessment methodologies.

Watershed Characteristics

Little Tomoka River is a main tributary of the Tomoka River. Located in the northern part of Volusia County near the city of Ormond Beach, the large majority of the Tomoka and most of its tributaries, including the Little Tomoka, has been designated as on OFW (Outstanding Florida Water), which affords it special protection status according to Florida Administrative Code 62-302.700. (See area on map.)

Land use in the 11 square mile Little Tomoka watershed is mainly either relatively low impact silviculture or it is undeveloped. There is a considerable amount of low- and medium density residential development in the downstream portion of the watershed near its confluence with the Tomoka, however, and this percentage is growing as development

increases.

The Little Tomoka is a fairly small, dark-water stream that flows through pine flatwoods from its origin at the Volusia/Flagler County line to where it empties into the Tomoka River. The farthest downstream reaches of the Little Tomoka have some brackish water influence from the Tomoka River estuary, with blue crabs, mullet, and other mesohaline animals sometimes present.

Results

FDEP Central District's Watershed Management and Monitoring Section has carried out bioassessments at Little Tomoka River seven times, the first being done in October 1997. This assessment, a biorecon (an abbreviated screening method employing four dipnet sweeps in the best available habitats) gave the stream a healthy rating. All three component metrics of the biorecon were easily passed, with 35 macroinvertebrate taxa collected, 10 of these being members of the sensitive EPT group (larval mayflies, stoneflies, and caddisflies). A total of 20 Florida index points were scored, based on the presence of a number of macroinvertebrate taxa which are intolerant of poor water quality. A second biorecon was performed in January of 1998, yielding similar excellent results.

A severe drought in the spring and early summer of 1998 brought about a series of extensive and very damaging wildfires in many parts of the state of Florida, including Volusia County. The upper watershed of the Little Tomoka was severely burned, and FDEP biologists decided to carry out periodic bioassessments of the Little Tomoka to determine if the fires had caused an impact to the macroinvertebrate community, and if so, to chronicle the recovery of the system. Accordingly, another biorecon was performed on July 16, 1998. The results differed dramatically from earlier assessments. The Little Tomoka received an "impaired" rating this time. There were 24 macroinvertebrate taxa collected, but there were only 2 EPTs, and the Florida Index score was a very low 3. Particularly affected were the mayfly and caddisfly communities, which dropped from 4 to 0 and 6 to 2 taxa, respectively, as compared to the previous assessment.

Returning to the site on September 10th, FDEP biologists found that the macroinvertebrate community had recovered substantially in less than two months. This time it received a "healthy" rating, with 36 total macroinvertebrate taxa, 5 EPT, and a score of 16 on the Florida Index. An additional biorecon perfomed on October 5th yielded similar results.

As a part of the Tomoka River Survey, SCIs were done at Little Tomoka on 3/8/2000 and 8/23/2000. On both occasions, it received a "very good" rating. In March, there were 34 macroinvertebrate taxa collected. This included 9 EPT, with a Florida Index score of 16. The most abundant taxon in the sample was fingernail clams (Pisidiidae), which accounted for about 22%. The next most abundant taxa were caddisflies of the genera *Cheumatopsyche* and *Oecetis*. In August, 31 macroinvertebrate taxa were found, the Florida Index score was 6, and there were 7 EPT. The clam *Eupera cubensis* was the dominant taxon in this sample, followed by the riffle beetle *Microcylloepus pusillus* and the chironomid midge ("bloodworm") *Tanytarsus* sp. M (Epler).

Water chemistry and physicochemical measurements taken along with the SCIs showed that

nutrient levels were low to average on both occasions. Coliform bacteria were present at moderate levels in March, but rose substantially by August. Fecal coliform bacteria were present at a concentration of 540 colonies/100 mL, and total coliforms at 1100 colonies/100mL. Though high, neither represents a violation of state standards for a single sampling event. Other measurements were normal, with the exception of iron, which was present in very high concentrations: 1510 ug/L in March and 572 ug/L in August.

Stream habitat assessment results were fairly good on both occasions. Out of a possible score of 160, the river earned 123 points in March and 115 in August. Low water velocity, a lack of some habitat types, and silt smothering of some instream habitats kept it from getting a very high score.

Significance

These results suggest two things:

1. The Little Tomoka River was in good ecological health as of the last sampling date, based on the healthy and diverse macroinvertebrate community found there under normal conditions, the overall good water chemistry results, and the fairly good habitat assessments.

2. The wildfires appear to have had a marked but temporary negative effect on the macroinvertebrate community of Little Tomoka River. Recovery appears to be fairly rapid.

Suggestions

The reason for the very high iron values should be investigated further. Certain coastal areas in Florida have naturally high iron levels in the soils, and this might be the case here. Because the macroinvertebrate community appeared to have recovered substanitally, but not completely, at the time of the most recent sampling, another bioassessment should be carried out to determine if the community has returned to the condition first seen in October 1997.

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