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

EcoSummary

Livingston Creek at Ruck's Dairy Road

September 5, 2001

EXCELLENT

ECOREG REF STREAMS

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



Livingston Creek at Ruck's Dairy Road has been used as a biological reference site by FDEP biologists since 1992. It was chosen as a reference site because it is one of the least-impacted streams of its type in this area of the state. Bioassessments have consistently shown excellent results. The September 2001 sampling was carried out to monitor the continued health of Livingston Creek, and to provide data useable in the further refinement of FDEP's Stream Condition Index (SCI).

Watershed Characteristics

Livingston Creek is located in southern Polk County between the cities of Frostproof and Avon Park. It originates in Lake Livingston south of Frostproof, and flows basically eastward. It is joined from the north by Reedy Creek south of Reedy Lake, and from the south by an unnamed stream originating in Lake Isabell in Avon Park. Livingston Creek flows into the north end of Lake Arbuckle within the Lake Arbuckle State Forest. The sampling site upstream of Ruck's Dairy Road is also within the state forest. That part of the creek which is in the state forest has been designated an Oustanding Florida Waterway (OFW) according to FAC 62-302.700. The purpose of this designation is to afford it a higher

level of protection than other water bodies.

Land use in the watershed is roughly 25% each of natural land, silviculture, and field or pasture. Approximately 20% of the land is used for agriculture. The remaining 5% has undergone residential development. Cow pastures and citrus groves are numerous in the upstream watershed, and have historically contributed to high nutrient and bacteria levels.

Results

The SCI assessment results gave Livingston Creek a "very good" rating. There were 36 taxa collected in the subsample, including 8 from the sensitive EPT group (larval mayflies, stoneflies, and caddisflies). An excellent Florida Index score of 22 was calculated for the site, based on the large number of pollution-intolerant macroinvertebrate taxa found there. The most common macroinvertebrate found was the mayfly *Caenis*, which accounted for 14.4% of the sample.

Water sampling yielded mixed results. Most nutrients were present at moderate levels. The exception was nitrate/nitrite, which was present at a concentration of 0.69 mg/L, or about the 90th percentile compared to other Florida streams. *In situ* water quality measurements were normal. Measuring 4.58 mg/L, dissolved oxygen was below the 5.0 mg/L state standard, but is probably natural for this system. The worst problem, however, was found with the coliform bacteria levels. Total coliform bacteria were present at a concentration of nearly *12,000 colonies/100 mL*. This far exceeds the upper violation limit according to state standards, 2400 colonies/100 mL. Fecal coliforms were also quite high (355 colonies/100 mL), but this did not represent a violation of state standards.

Habitat assessment results were good. Livingston Creek received a score of 128 out of a possible 160 points, or 80%.

Significance

In terms of biological health, Livingston Creek is in very good shape. The very diverse and robust macroinvertebrate community and the good habitat assessment results suggest a healthy system. The very high bacteria levels do not appear to have had any effect on the macroinvertebrate community. However, they do constitute a potential human health risk, as this site is often used for recreation. The high nitrate/nitrite levels are a concern as well, as they have a greater potential for enhancing eutrophication of Lake Arbuckle downstream. The OFW status of the lake and part of the creek, as well as the fact that Livingston Creek is a part of the Kissimmee River system (an element of the Lake Okeechobee/Everglades /Florida Bay system), makes the water quality of this stream important.

Suggestions

Continued assessment of the ecological health of this stream is important to monitor any additional degradation of water quality, and for further refinement of the SCI methodology. Suggestions for improvement of water quality include limiting cattle access to Livingston Creek and its tributaries, and enhancing stormwater systems used by lakeside developments

and agricultural interests upstream. FDEP will be carrying out intensive monitoring of sites in the Kissimmee River basin beginning in 2004 for TMDL screening purposes. Hopefully, this will help address the nutrient and bacteria problems present at Livingston Creek.

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