EcoSummary

Roberts Branch at Curryville Road near Chuluota

March 12, 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



The purpose of this assessment was to monitor the health of Roberts Branch, a tributary of the St. Johns River. One particular reason for interest in the condition of Roberts Branch was the earlier discovery of certain macroinvertebrate species rare in the Florida peninsula at this site. The data collected will also be useable in the further refinement of FDEP's Stream Condition Index bioassessment methodology.

Watershed Characteristics

Roberts Branch is a small, darkly tannic tributary of the St. Johns River located near the town of Chuluota in southern Seminole County. It originates in cypress wetlands near the community of Bithlo in Orange County. The stream flows generally northward into Seminole County for roughly 10 miles before emptying into the Jackson Creek Diversion Canal, which flows eastward into the St. Johns River at the area known as Puzzle Lake. The stream flows through deciduous forest and marshes, as well as cattle pastures, along its watercourse. Land use in the 6.6 square mile watershed is approximately equally divided between field and citrus crops, low-density residential development, cattle pasture, and natural wetlands and uplands. The residential fraction is expected to increase, as many homes

are being built in the Chuluota area at this time.

At the sampling site, the stream is fairly shallow (about 0.5m deep at normal water levels), with a wide floodplain forested by bays and other hardwoods. Despite is shaded character, a substantial number of aquatic and wetland plants abound at the stream, including *Peltandra virginica, Pontederia cordata, Orontium aquaticum, Sphagnum* sp., *Woodwardia* sp., *Osmunda cinnamonea, Osmunda regalis, Saururus cernuus, Centella erecta, Hydrocloa* sp, and several others.

Due to months-long drought conditions, the water level was quite low at the time of sampling.

Results

Roberts Branch did very well on the SCI. It received a score of 29, placing it in the "excellent" category. There were 34 different macroinvertebrate taxa found in the subsample, including four "EPT" taxa (larval mayflies, caddisflies, and stoneflies). It earned a score of 10 on the Florida Index, which is based on the number of pollution-intolerant species present. The most common macroinvertebrate found (36.6%) was the chironomid midge (a.k.a. bloodworm) *Paratanytarsus* sp. A (Epler). The dipteran (larval fly) community was quite diverse, accounting for 22 of the 34 species collected at Roberts Branch.

Water sample results were all good. Nutrients were present at low to moderate levels. *In situ* water quality measurements were all normal. The dissolved oxygen level (3.58 mg/L) was below the state standard of 5.0 mg/L, but it is probably a natural condition for this type of system.

The habitat assessment results were fairly good. Roberts Branch received a score of 119 out of a possible 160 points, or 74.4%. The habitat score was substantially reduced from what it might normally have been due to the very low water velocity (maximum obeserved: 0.05 m/sec) resulting from drought conditions occurring at the time. Some disruption of the riparian zone by cattle and indications of dredging many years ago were also noted.

Significance

These results suggest that Roberts Branch has remained in good ecological health, despite the stress to the system resulting from the drought. As stated above, one goal of this sampling was to determine whether or not certain rare taxa had persisted here. The caddisflies *Pycnopsyche indiana* and *Molanna* sp. had been collected at Roberts Branch in 1997-98 (Rasmussen and Denson 2000), and because they are considered a relict, and thus imperiled, population, FDEP biologists hoped to find them here again. They were not collected in the subsample on this date. However, they were found here two months later, so the population appears to be secure at this time.

Suggestions

Because the Roberts Branch watershed serves as a refuge for remaining populations of

Pycnopsyche and *Molanna*, as well as other regionally rare and/or imperiled species, it is important that the ecological stability and biodiversity of the watershed be preserved. Landowners near the stream should minimize disturbance of the ecosystem by avoiding excessive use of pesticides, herbicides, and fertilizers, maintaining septic and sewer systems, and avoiding destruction of the riparian zone. At the sampling site, cattle cause substantial disruption of the stream bank vegetation. If this area could be fenced, and cows allowed to drink elsewhere, this would be one step in helping to preserve this unique Florida stream.

(Reference: Rasmussen, A.K. and D.R. Denson. 2000. Range extension, ecological notes, and new records of *Pycnopsyche indiana* (Trichoptera: Limnephilidae) from Florida. Entomological News 111(5): 359-366.)

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Published by the Florida Department of Environmental Protection
Tallahassee, Florida
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