



EcoSummary

Silver River upstream of boat ramp canal,
Marion County
September 16, 1996 - March 16, 1999



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

Purpose

Silver River is the spring run of Silver Springs, which is one of the largest spring systems in the world. The discharge of Silver Springs, including the head spring and numerous smaller springs immediately downstream, is approximately 500 million gallons per day¹. The Silver Springs park has long been a top Florida tourist attraction. The river and the 2300 surrounding acres of land make up Silver Springs



State Park. The Silver River, a major tributary of the Ocklawaha River, dramatically improves the water quality and enhances the flow of the Ocklawaha. The difference in the two rivers is apparent at the confluence, where the crystal clear water of the Silver River joins - seemingly unwillingly at first - the dark, turbid water of the upper Ocklawaha. (For an Ecosummary on the upper Ocklawaha River, refer to the website <http://www2.dep.state.fl.us/water/Slerp/bio/biorepts/ecosums/oorss96.pdf> .) Silver River is a FDEP Central District biological reference site used in the development of biological criteria. For all of these reasons, it is important to monitor the health of this unique and important water body. ¹ Ferguson, G.E. et al. 1947. Springs of Florida. Geological Bulletin No. 31, Florida Geological Survey, 196 pp.

Background

Originating at Silver Springs, the river flows in a generally easterly direction for approximately five miles to its confluence with the Ocklawaha River. Although the spring system itself is surrounded by the attraction and the city of Silver Springs, the area surrounding the Silver River is basically undeveloped. Seventy-four percent of the Silver River watershed, which is approximately 20.6 square miles in area, is undeveloped uplands and wetlands. Urban development and utilities account for 12%

of the land use. Rangeland and agriculture constitute 9% and 4%, respectively, of the remaining land usage.

Results

The results of the Stream Condition Index indicate that the Silver River is in excellent biological health. SCI scores of 31 in 1996 and 29 in 1999 place it in the "very good" category on both counts. Thirty-six different macroinvertebrate taxa were collected on 9/16/96, whereas 37 taxa were found on 3/16/99. Of these, 7 (in 1996) and 11 (in 1999) were members of the sensitive EPT (larval mayflies, stoneflies, and caddisflies) group. In 1996 and 1999, 22 and 21 points, respectively, were scored on the Florida Index, which is based on the number of pollution-intolerant taxa present at a given site. The most common macroinvertebrate species collected in 1996 was the caddisfly *Hydropsyche*. In 1999, it was the mayfly *Tricorythodes albilineatus*. Water chemistry results were also good, and almost identical on the two sampling dates. All nutrient levels were very low, with the exception of nitrate/nitrites, which were very high (0.95 mg/L in 1996 and 1.1 mg/L in 1999). A trend toward elevated nitrate levels has become apparent in many springs throughout the state in recent years. It is believed that this is a result of historic land uses and their impacts to the Floridan aquifer. As one would expect, turbidity and water color were extremely low in Silver River. Fecal coliform bacteria counts (taken in 1999 only) were also very low: 31 colonies per 100 mL. The habitat assessment gave Silver River a score of 140 out of a possible 145 points in 1996, and 133 out of 145 points in 1999. A scarcity of one type of habitat (leaf packs) and minor silt smothering kept the site from receiving a perfect score on both occasions.

Significance

These results suggest that the good ecological health of the Silver River has remained stable. The excellent biological community, water chemistry values (with the exception of nitrates), and habitat assessment indicate a healthy system. Elevated nitrates are a continuing concern for Florida springs, and research is in progress to learn more about the problem.

Suggestions

Because of its importance as a source of clean water to the Ocklawaha, its popularity as a recreation area, its uniqueness and history, and its value as a biological reference site, it is vital that the ecological health of the Silver River continue to be monitored and maintained.

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