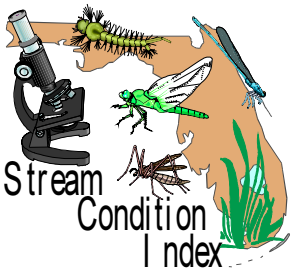
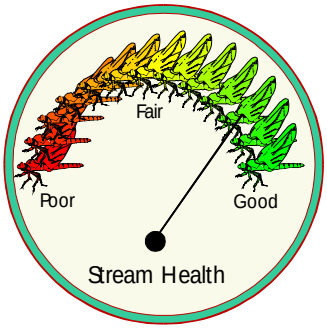


EcoSummary

SCI Report

Mills Creek @ Brumley Road
10 February 1997



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 the State of Florida

Purpose

Mills Creek, located in SE Seminole County near Chuluota, flows out of 232-acre Lake Mills to join the Econlockhatchee River about three miles to the north. The Econ itself empties into the St. Johns River approx. five miles downstream. A Seminole County park (Lake Mills Park) is located on the south shore of the lake. Previously, FDEP had done no water quality sampling in Mills Creek at Brumley Road. It was therefore chosen as an "unknown" site for the continuing refinement of the Stream Condition Index. Also, as a part of the Econlockhatchee River system Outstanding Florida Waterway (OFW), it is important to monitor the water quality of Mills Creek.

Basin Characteristics

Land use in the Mills Creek watershed is predominantly medium density urban development (24%), plus agriculture and rangeland (34%). Upland forests and wetlands account for 10% and 18% of the land use, respectively. Water covers the remainder of the watershed's surface area. The Mills Creek watershed is roughly 13 square miles (8284 acres) in area. In the immediate vicinity of the sample site, there is a house and yard on the west side of the stream, and a cattle enclosure on the east side. There is some limited natural riparian buffer zone between these man-made structures and the stream itself.

Results

Overall assessment results suggest that Mills Creek is in very good ecological health. It received a Stream Condition Index score of 31, putting it in the "very good" category. Thirty-seven macroinvertebrate taxa were collected at the site. This number included six which are members of the sensitive water quality group designated "EPT" (larval mayflies, stoneflies, and caddisflies). The large number of good water quality taxa present earned it a Florida Index score of 18. Sixty percent of the macroinvertebrates collected were dipterans (fly larvae). The most abundant animal in the sample was the freshwater limpet (Ancylidae), which is commonly found attached to sunken leaves in streams.

The site received a habitat assessment score of 107 out of a possible 145 points. This places it in the low part of the optimal range for habitat quality. Although there was a good variety of macroinvertebrate habitats present and the stream itself was mainly unaltered and erosion-free, the narrowness of the riparian buffer zone and the low water velocity in some areas prevented it from receiving a very high habitat score.

The water quality in Mills Creek at Brumley Road was very good at the time of sampling, with one notable exception. Despite the fact that all other water quality parameters were within normal ranges (see table, p. 2), total and fecal coliform bacteria levels were extremely high. Measurements showed that 5600 colonies/100mL total coliforms and 960 colonies/100mL fecal coliforms were present. Both measurements are definite violations of water quality standards for Class III fresh waters. No known sources were detected, however.

Significance

These results demonstrate that Mills Creek at Brumley Road is currently in very good condition from an ecological standpoint, as evidenced by a diverse and healthy macroinvertebrate community, good habitat, and overall very good water quality. The presence of such high levels of coliform bacteria, however, could be a reason for concern from a public health standpoint. Coliform levels can fluctuate widely over time, and may vary with flow conditions and the length of time since the episode of waste loading occurred. Consequently, the high coliform levels found here may represent a continuous problem or might be the result of an isolated input of wastes.

Suggestions

We will repeat this sampling protocol here in September 1997. This will allow for comparison of the stream conditions in winter with those in summer. If bacterial counts are still strongly elevated, we plan to inform Seminole County health officials of our findings.

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