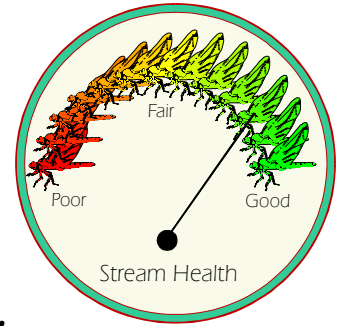


EcoSummary

SCI Report



Bear Creek @ Northern Way, Seminole County 24 September 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

As recently as May 1983, effluents from several municipal wastewater treatment plants directly or indirectly entered Lake Jesup via a number of streams in the Winter Springs vicinity. Although the streams feeding the lake no longer receive WWTP effluents, they have the potential to carry substantial loads of



nonpoint source pollution from the sprawling urban development of the northern part of Orange County and surrounding parts of Seminole County into the lake.

This site was chosen for the dual purposes of providing information to persons and agencies involved in restoration efforts being undertaken on Lake Jesup (spearheaded by St. Johns River Water Management District) and for the continuing development of FDEP stream bioassessment methodology.

Basin Characteristics

This stream originates at Bear Gully Lake at the southern edge of Seminole County. Its middle section, canalized about 50 years ago, is often called Bear Gully or Bear Gully Creek. Shortly beyond the point where it is joined by Lightwood Knox (a.k.a. Lighter Knot) Canal just west of Oviedo, its course again becomes natural and remains so until it flows into Howell Creek in the Tuskawilla area of Winter Springs. The sampling site is a short distance upstream from this confluence. Residential and agricultural development account for two-thirds of land use in the Bear Creek watershed. Although surrounded by urban development in the upper and lower segments of its watershed, a natural wetland buffer has been preserved (especially in its lower reaches) where Bear Creek flows through these neighborhoods. For the most part, this is not true in the creek's canalized middle section, where the land use is primarily agriculture. A shopping mall which will eventually cover an area of 1.2 million ft² has recently been built within the Bear Creek watershed near Oviedo.

Results

The results of biological sampling at Bear Creek suggest a healthy macroinvertebrate community. The SCI rated Bear Creek as "very good." There were 27 macroinvertebrate taxa found in the subsample, five from the EPT group (larval mayflies, stoneflies, and caddisflies). The site received a Florida Index score of 11. The most common invertebrate collected was the riffle beetle *Microcyllloepus pusillus*.

Habitat quality at the site was very good, with plentiful submerged roots and snags available for colonization by macroinvertebrates. The riparian zone is well preserved in this stretch of the creek, reducing the effects of nonpoint source runoff. The over-all habitat rating was 131 out of a possible 145 points.

Water chemistry data reveal that the levels of nutrients present here all exceed the 50th percentile ranking compared with other Florida streams, though none constituted a violation of water quality standards. This is true also for fecal coliform bacteria, which measured in the 91st percentile, but did not exceed Class III freshwater standards.

Physical water quality measurements were good at Bear Creek. Dissolved oxygen, pH, conductivity, and water temperature were all within normal ranges.

Significance

The elevated nutrient and coliform bacteria levels recorded at Bear Creek do not appear to have had substantial effects on the macroinvertebrate community. Results of the biological assessment were good.

Fortunately, modern stormwater retention methods were used in many of the residential and commercial developments in the watershed, leading to a



reduction in the amount of nutrient- and bacteria-laden stormwater that would otherwise enter Bear Creek during storm events. For the time being, Bear Creek seems to be holding its own.

Suggestions

Suggestions for the improvement of the environmental health of Bear Creek include appropriate maintenance of stormwater retention systems where they are present, establishment of stormwater management improvements where they are not, active or passive rejuvenation of the riparian zone of lakes and streams within the drainage, and the preservation of remaining wetland areas.



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