



EcoSummary



LAKE PORTER, 10/24/2000

LCI: A rapid, cost-effective screening mechanism for identification of biological impairment

Purpose

Lake Porter is one of many strongly urbanized lakes in the Orlando metropolitan area. The objectives of this investigation were to evaluate the level of ecological degradation of Lake Porter and to provide data useable in FDEP's continuing lakes biological assessment criteria (biocriteria) development.

Background

Lake Porter is located in central Orange County within a mainly residential section of Orlando southwest of the intersection of Semoran Blvd. (SR 436) and Curry Ford Road. It lies in the Lake Conway drainage basin within the Central Florida Ridges and Uplands ecoregion. Land use in the vicinity of the 30-acre lake is mostly medium- and high-density residential development, with some commercial properties along major roadways. In its immediate vicinity, the lake is surrounded by homes, with a neighborhood clubhouse and pool on the south shore.



Results and Discussion

Biologists from FDEP Central District's Watershed Management and Monitoring Section carried out biological and water chemistry sampling at Lake Porter on October 24, 2000. In addition, *in situ* physicochemical measurements were made using a multimeter and an assessment of lake habitat was performed. The results of the biological sampling, which consisted of 12 benthic grabs taken using a petite ponar dredge at evenly spaced locations throughout the lake, indicated a fairly healthy benthic macroinvertebrate community.

Fifteen different invertebrate species were collected, including two mollusks, one segmented worm, one amphipod crustacean, one mayfly, and ten dipteran (fly) larvae. Dipterans made up about 58% of the sample. The most abundant macroinvertebrate found in the sample was the amphipod *Hyaella azteca*, which constituted about 34% of the sample. Lake Porter received a good rating on the benthic portion of FDEP's Lake Condition Index, which is currently under development. Invertebrate community diversity was rated as moderate by the Shannon-Weaver diversity index, receiving a score of 2.52. Phytoplankton diversity was also fairly high, with 23 taxa found in water from Lake Porter. Water chemistry results were fairly good. Nutrient levels were moderate to somewhat elevated, though none was extremely high. Physicochemical measurements indicated neutral pH (~7.0 su) and a good daytime dissolved oxygen concentration of 8.19 mg/L. The Secchi depth (a measure of water clarity) was good, at 2.2 m, allowing submerged macrophytes to grow on the bottom in some spots. The habitat assessment score was somewhat low (62 out of a possible 100 points) largely due to a strongly altered shore zone, intense upland land use, and stormwater inputs.

Significance

These results suggest that, despite its urban setting, Lake Porter is in fairly good ecological health. The diversity of macroinvertebrates and phytoplankton point to a relatively stable ecosystem. The moderate nutrient levels and fairly good Secchi disc reading suggest that nutrient enrichment is not a severe problem in Lake Porter at this time. The low habitat assessment score, however, attests to the extensive development in this lake's watershed.

Suggestions

Restoration of the shore zone of Lake Porter, where possible, would be helpful in mitigating some of the effects of the intense development in the area. Lakeside property owners should use fertilizers and pesticides sparingly, if at all.

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