EcoSummary

Lake Clay in Highlands County

May 25, 2004

VERY GOOD

TMDL STUDIES

Lake Condition Index (LCI): A developmental biological assessment tool used by FDEP biologist to indicate ecosystem health and identify impairment in Florida lakes

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 objective of this investigation was to evaluate the biological condition of Lake Clay, using the Florida Lake Condition Index (LCI).

Watershed Characteristics

Flow-through Lake Clay (367ac) lies just northeast of the Town of Lake Placid in Highlands County, and connects via canals with Lake Huntley to the south and Lake Apthorpe to the north, where a fixed crest weir is present. Landuse within 500 m of the lake is primarily urban/residential (59%) and grove (25%). A shopping center and a portion of two groves lie in the southwest-south central sector. Lakefront is 90% developed with single and multifamily housing, and two mobile-home parks. Because of this development the natural buffer of shorefront vegetation has been largely replaced by grass sod. The topography slopes steeply around the southwest basin

Results

The pH of Lake Clay was 7.4, and water clarity was good, the Secchi disc was visible on the bottom at 3.7 m. The primary nutrients, nitrite-nitrate and phosphorous, were at undetectable levels.

Mid-lake phytoplankton density in the upper stratum of water was very low (390 cells/ml) and dominated by the green alga *Selenastrum* and the bluegreen *Synechocystis*. Thirty-six taxa were collected. AGP was low (2.0 mg dry wt./L), and chlorophyll *a* concentration was at an undetectable level.

A highly diverse macroinvertebrate community (32 taxa), dominated by chironomid midges, occupied the sublittoral zone, a zone characterized by silty sand, fine particulate organic matter, and several types of submerged vegetation (*Eleocharis baldwinii* - road grass, *Najas quadalupensis* - southern naiad, *Nitella* - stonewort, and *Sagittaria subulata* - dwarf arrowhead). The dominant species (those accounting for 5% or more of the total number) included the large worm *Sparganophilus* sp., the amphipod *Hyalella azteca*, and four midges; *Cladotanytarsus* sp. A Epler, *Glyptotendipes paripes*, *Polypedilum halterale*, and *Tanytarsus* sp. L Epler. Based on the average summer benthic density of 3935/m^2 for Highlands County lakes, Lake Clay's density was near the average at 2499 individuals/m^2 . Shannon-Weaver diversity was very high at 4.45. Dissolved oxygen concentration near the bottom of the sublittoral zone averaged 8.7 mg/L.

Lake Clay scored 69 points (out of a possible 140 points) on the habitat assessment, which evaluates seven parameters: Secchi depth, in-lake vegetation quality, stormwater inputs, bottom substrate quality, lakeside adverse human alterations, upland buffer zone quality, and adverse watershed landuse. Four assessment categories are recognized: Optimal, suboptimal, marginal, and poor. Clay's 69 points place the lake in the high end of the marginal category overall. It received low scores on all but Secchi depth and bottom substrate quality.

Significance

Despite the marginal habitat assessment, the biological condition of Lake Clay was very good, scoring 53 points. [The "very good" category is defined as scores equal to or greater than 50.]

Suggestions

Because lakefront is residentially developed, lakeside property owners can lessen the impact to their lake by reducing or even eliminating the use of pesticides, herbicides, and inorganic fertilizers - all of which can be carried into the lake during storm events. Restoration of shoreline vegetation, and preservation of that which remains, would be beneficial as well.

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