EcoSummary

Little Lake Grassy in Highlands County

July 27, 2004

TMDL STUDIES

GOOD

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 Little Lake Grassy, using the Florida Lake Condition Index (LCI).



Watershed Characteristics

Little Lake Grassy is a small lake (25 ac) that connects to Lake Grassy under Route 27. Most of the land within 500 m of the lake is planted with groves, and there is some urban development. Most (70%) lakefront is still in a natural condition, the rest is developed with single-family homes. Two stormwater pipes associated with highway drainage discharge into the Little Grassy/Grassy connection below Route 27.

Results

Lake pH was 7.6 and water clarity was good with a Secchi depth of 2.5 m. The primary nutrients, nitrite-nitrate and phosphorous, were near undetectable levels.

The density of mid-lake phytoplankton was elevated at 11,100 cells/ml, and 20 taxa were collected in the grab sample. Three species predominated - all bluegreens: *Cyanobium parvum*, *Jaaginema* sp., and *Synechocystis* sp. Chlorophyll *a* was below detectable levels and AGP was 2.6 mg dry wt./L.

A diverse macroinvertebrate community (22 taxa), dominated by chironomid midges and oligochaete worms, occupied the sublittoral zone, a zone characterized by silty sand and fine particulate organic matter. Sediments on the east side contained course particulate organic matter. Benthic colonies of the bluegreen alga *Aphanothece* were common throughout. Based on the average summer benthic density of 3935/m^2 for Highlands County lakes, the density in Little Grassy Lake was very low, 690 individuals/m^2. The dominant species (those accounting for 5% or more of the total number) included the worm *Dero digitata*, the amphipod *Hyalella azteca*, the mayfly *Caenis* sp., and the midges *Cladotanytarsus* sp. A Epler, *Procladius* sp. and *Tanytarsus* sp. L Epler. Submerged vegetation was absent. Shannon-Weaver diversity was high at 3.49. Dissolved oxygen concentration near the bottom of the sublittoral zone averaged 7.2 mg/L.

Little Grassy Lake scored 87 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. Little Grassy's 87 points place the lake in the suboptimal category overall.

Significance

The biological condition of Little Grassy Lake was good, scoring 49 points, just one point shy of very good. [The "good" category is defined as scores 35-49.]

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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