EcoSummary

Lake Grassy in Highlands County

July 13, 2004

TMDL STUDIES

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



Watershed Characteristics

Lake Grassy (517 ac) is located just to the east of Route 27, south of the Town of Lake Placid in Highlands County. The lake has no inflow, but there is an outlet at the north end that carries highwater flow over a fixed-crest weir to Lake Huntley. Lakefront is approximately 90% developed with primarily single-family housing. Condominiums have been built at the southern end. A series of residential finger canals extends the entire eastern side, and a trailer park is situated midway on the western side. Because of this development the natural buffer of shorefront vegetation has been largely replaced by grass sod. Landuse within 500 m of the lake is primarily urban/residential (52%) and grove (25%). Upland groves lying immediately west of Route 27 parallel the lake.

Results

Grassy is a clear lake, with a Secchi depth of 3.0 m recorded. Lake pH was high at 8.4. The primary nutrients, nitrite-nitrate and phosphorous, were at undetectable levels.

Phytoplankton density at the mid-lake station was very low (490 cells/ml) and dominated by the bluegreens *Microcyctis* and *Synechocystis*, the green *Chlorella*, and the diatom *Cyclotella*. Thirty-nine taxa were collected. Both AGP and chlorophyll *a* concentration were at an undetectable levels.

A diverse macroinvertebrate community (22 taxa), dominated by chironomid midges and oligochaete worms, occupied the sublittoral zone, a zone characterized by uniformly silty sand with scattered *Nitella* (stonewort). Benthic colonies of the bluegreen alga *Aphanothece* were abundant in the southern end of the lake. Based on the average summer benthic density of 3935/m^2 for Highlands County lakes, the density in Lake Grassy was very low, 620 individuals/m^2. The dominant species (those accounting for 5% or more of the total number) included the worms *Dero pectinata*, *Limnodrilus hoffmeisteri*, and *Pristina aequiseta*, the shrimp *Palaemonetes paludosus*, the true midge *Polypedilum halterale* grp., and the phantom midge *Chaoborus* nr. *albatus*. Shannon-Weaver diversity was high at 3.63. Dissolved oxygen concentration near the bottom of the sublittoral zone averaged 7.6 mg/L.

Lake Grassy scored 61 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. Grassy's 61 points place the lake in the marginal category overall. It received low scores on all but Secchi depth, bottom substrate quality, and vegetation quality.

Significance

Despite the marginal habitat assessment, the biological condition of Lake Grassy was very good, scoring 65 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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Published by the Florida Department of Environmental Protection
Tallahassee, Florida
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