EcoSummary

Lake Red Water in Highlands County

August 10, 2004

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 Red Water, using the Florida Lake Condition Index (LCI).

Watershed Characteristics

Lake Red Water (66 ac) is located just west of Route 27, about 5.5 km NNW of the Town of Lake Placid in Highlands County. The lake connects to adjacent Lake Francis via a canal in the northwest corner, and connects to adjacent Little Red Water Lake via a canal on the east side. No water control structures are present. Primary landuse within 500 m of the lake is grove (48%) and residential (19%). Lakeside is about 70% occupied by single-family homes. Because of this development the natural buffer of shorefront vegetation has been largely replaced by grass sod.

Results

Lake pH was 7.1 and Secchi depth was 1.4 m. The primary nutrients, nitrite-nitrate and phosphorous, were near undetectable levels.

The density of mid-lake phytoplankton was 4298 cells/ml, and 30 taxa were represented. Three bluegreens predominated: *Synechocystis*, *Jaaginema* and *Rhabdogloea*. Chlorophyll *a* concentration was measured at 16 µg/L, and AGP was undetectable.

Sublittoral sediment was silty sand with tubes of the midge *Glyptotendipes paripes*. Twenty macroinvertebrate taxa were recorded from the benthic sample and most were midges and worms. The dominant species (those accounting for 5% or more of the total number) were also worms (*Dero pectinata*, Enchytraeidae, *Pristina aequiseta*) and a midge (*Glyptotendipes paripes*). Based on the average summer benthic density of 3935/m^2 for Highlands County lakes, the density in Lake Red Water was somewhat higher at 5880/m^2. Shannon-Weaver diversity was high at 3.32. Dissolved oxygen concentration near the bottom of the sublittoral zone was low, averaging 4.7 mg/L.

Lake Red Water scored only 58 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. Red Water's 58 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 Red Water was good, scoring 47 points. [Point range for the "good" category is 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.

For more information, please contact
Robert Rutter
South District Branch Office
28000 A-10 Airport Road, Punta Gorda, FL 33982
(941) 575-5810 (Suncom 765-5810)
E-mail: robert.rutter@dep.state.fl.us

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