



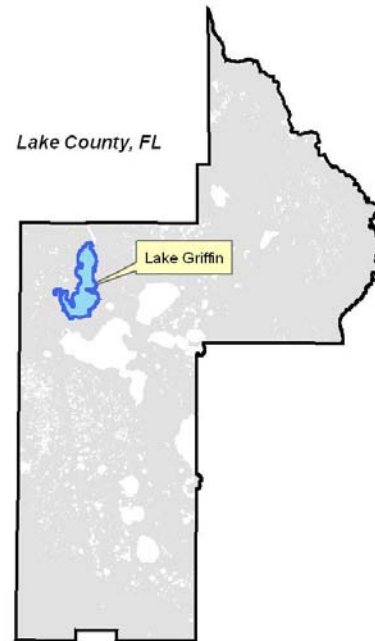
Lake Griffin EcoSummary

February 2008

Lake Condition Index (LCI): A biological assessment tool developed by the Florida Department of Environmental Protection to indicate ecosystem health and identify impairment in Florida lakes

Watershed Characteristics

Located in central Lake County, the 9,327-acre Lake Griffin is surrounded largely by a mix of residential, institutional and agricultural lands. Historically, discharges from muck farms represented 59.2% of estimated Total Phosphorus (TP) loading and 19.3% of estimated Total Nitrogen (TN) loading. Acquisitions of muck farms by St. Johns River Water Management District (SJRWMD) since 1993 have substantially reduced their discharges to Lake Griffin. In 1991, annual TP loading into Lake Griffin was greater than 80,000 kg/year. By 2000, the annual TP loading had dropped to less than 15,000 kg/year. Over the last decade, phosphorus discharges to Lake Griffin were nearly equally divided among the Emeralds Marsh Conservation Area (30%), agriculture (29%), and tributary flows from Lake Eustis (28%). Other phosphorus sources for Lake Griffin included urban-residential runoff (3.5%), septic tank effluents (2.4%), upland agriculture (0.5%), and point sources (0.07%). Because Lake Griffin is larger than 1000 acres in size, two separate LCIs were performed, one on the north end and one on the south end. The 12 benthic grabs for Lake Griffin South and 12 benthic grabs for Lake Griffin North were taken in February of 2008.



Results

Lake Griffin North received a poor LCI rating and Lake Griffin South improved from a poor score in 2007 to a good LCI rating in 2008. Eleven different macroinvertebrate taxa were collected on the north portion and twenty two taxa on the south. On Lake Griffin South, the most abundant macroinvertebrate collected was the oligochaete, tubificid worm *Limnodrilus hoffmeisteri*. Oligochaeta or aquatic worms comprised 47.6% of the total macroinvertebrate population in the south portion of the lake. Diptera (chironomid midges and phantom midges) were the predominate taxa present in the north portion of Lake Griffin and comprised 56.7% of the total population of macroinvertebrates in the lake. Four of the twelve benthic samples taken in the south portion of the lake

were predominately muck while eleven of the twelve northern lake samples were primarily muck.

LCI SCORES

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
Griffin South	45.06	26.72	30.89	41.31
Griffin North	32.95	41.05	24.79	23.08

A part of the LCI scoring system includes the Hulbert Index which is an indicator of the presence of pollution-intolerant lake macroinvertebrate species. Lake Griffin North received a Hulbert Index score of 1. Lake Griffin South received a Hulbert Index score of 4. Higher Hulbert Index scores indicate a greater number of pollution sensitive species present and better water quality. Lake Griffin South had 1 species of Chironominae present in the benthic samples, *Tanytarsus limneticus*, one caddisfly, *Oecetis* sp. and one Amphipod, *Hyaella azteca*, which are sensitive to pollution. No caddisfly species which are sensitive to pollution were present in the benthic grabs collected from Lake Griffin North.



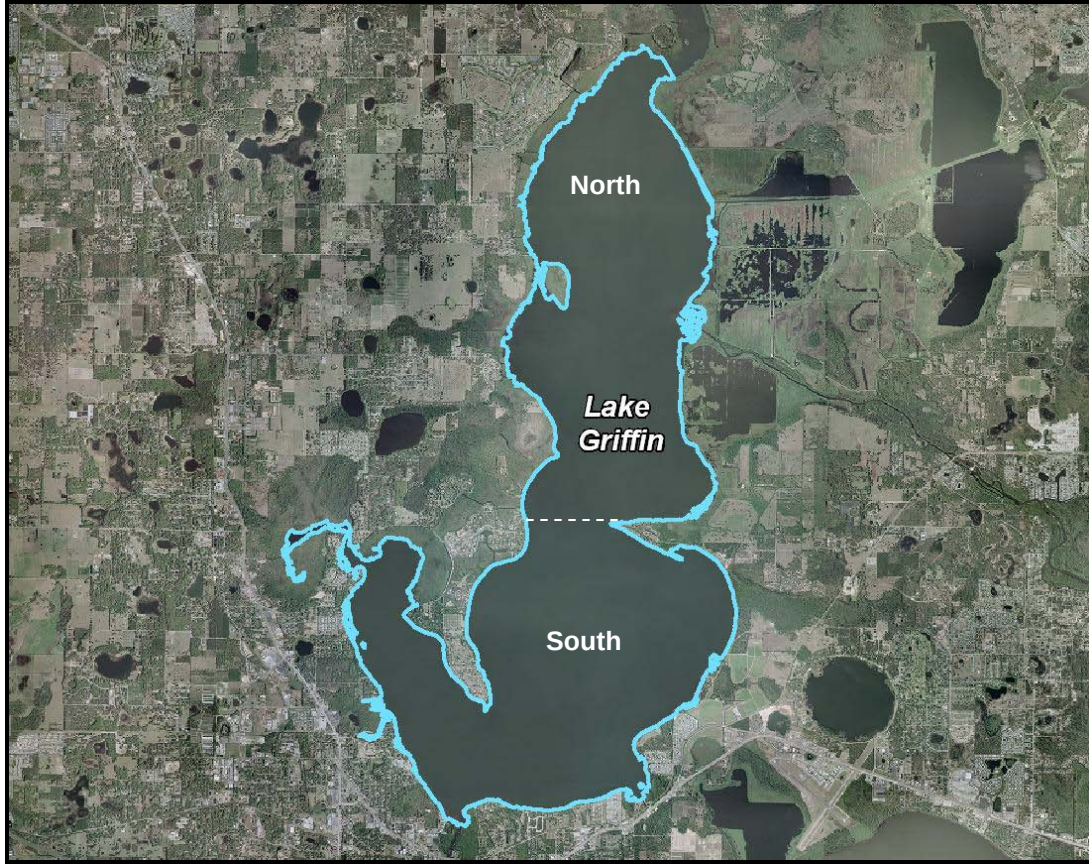
Significance

The SJRWMD is currently working on marsh restoration efforts within the former muck farms surrounding Lake Griffin. Once restored, the marshes will be reconnected to Lake Griffin as the water quality within the marshes improves. The SJRWMD is also proposing a plan to increase the fluctuations in the water level in Lake Griffin. This could help Lake Griffin recover from pollution impacts by drying out large portions of mucky shoreline and helping to re-establish the aquatic plants essential for fisheries habitat. The combined results of these projects for Lake Griffin should result in improvements in the biota, and will be monitored closely for potential improvements in LCI ratings in the coming years.

Because the increased fluctuations affect navigation, The Lake County Water Authority dredged canals around Lake Griffin to enable the homeowners in these areas to access the lake during periods of low water levels. The LCWA dredging project took out more than 340,000 cubic yards of muck, sand, clay and detritus from the bottom of the canals. All of this material was placed on a former muck farm and will be used to help in restoration of the site.

Suggestions

Lakeside property owners can help keep the lake healthy by minimizing, or eliminating, the use of pesticides, herbicides and inorganic fertilizers, by preserving native shore zone vegetation, by minimizing impervious surfaces on their properties, by being careful with the use and storage of petroleum products, and by properly maintaining septic or sewer systems.



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