

Lake Harris EcoSummary

April 2017



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 15,087-acre Lake Harris is surrounded largely by a mix of residential, natural (wetlands and forest/rangelands) and agricultural lands. The largest single external phosphorus load to Lake Harris-Little Lake Harris was discharges from the Lake Harris Conservation Area, accounting for about 25% of the estimated load. Other phosphorus sources for Lake Harris-Little Lake Harris included atmospheric deposition (20%), tributary discharges (15%), urban-residential runoff (11%), muck farms (7%), septic tank effluents (4.5%), upland agriculture (1.5%) and point sources (0.9%). Because Lake Harris is larger than 1000 acres in size, two separate LCIs were performed, one on the east side and one on the west side. The 12 benthic grabs for Lake Harris East and for Lake Harris West were both taken in April of 2017.



Results

Lake Harris East improved to a very good and Lake Harris West maintained a good rating on the LCI. Significant improvements in the scores are due largely to the increase in the Hulbert scores, the increase in diversity or number of different species present, the EOT score (caddisfly species present), and the decrease in the percent Diptera. Twenty different macroinvertebrate taxa were collected on Lake Harris West and twenty seven different taxa were collected on Lake Harris East. In 2014, the most abundant macroinvertebrate species collected on Lake Harris West were the chironomid *Cladotanytarsus viridiventrius* (formerly *Cladotanytarsus sp. B*) which comprised 41% of the total macroinvertebrate population, *Limnodrilus hoffmeisteri* which comprised 11.3%, and *Hydrobiidae* which comprised 16% of total macroinvertebrate population. In 2017, the most abundant species were the aquatic leeches *Helobdella stagnalis* and *Helobdella elongata* and the tubificid worm *Limnodrilus hoffmeisteri* which comprised 30.6%, 20.7% and 17.1%, respectively. In 2014, the most abundant macroinvertebrate

species collected On Lake Harris East were the chironomid *Cladotanytarsus viridiventrius* (formerly *Cladotanytarsus sp. B*) which comprised 46.4% of the total macroinvertebrate population, *Limnodrilus hoffmeisteri* which comprised 19.6% of the total macroinvertebrate population and the snail *Hydrobiidae* which comprised 9%. In 2017, the most abundant species were *Limnodrilus hoffmeisteri* and the amphipod *Hyalalea azteca* type which comprised 30.7% and 15.3%, respectively.

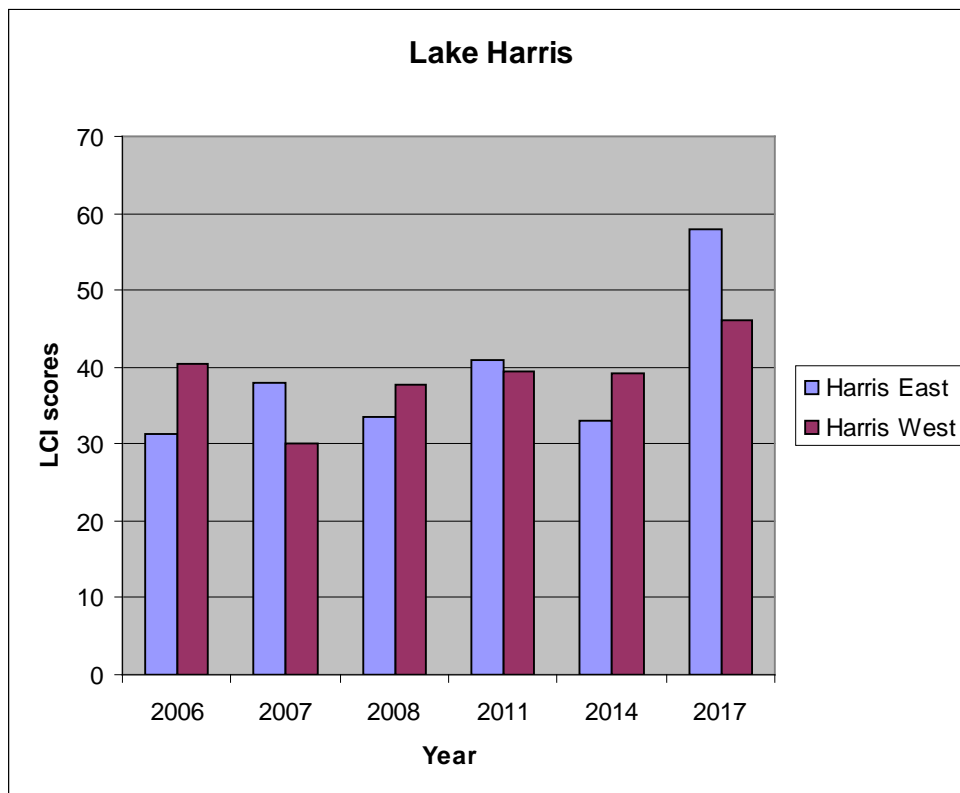
The sediment in the benthic samples taken on the west side of the lake was predominately coarse particulate organic material with a mixture of muck and sand. In 2011, Lake Harris West had the exotic submersed plant *Hydrilla verticillata* present in three of the twelve benthic grabs taken during this sampling event. This was the first time hydrilla had been encountered on Lake Harris since benthic sampling began in 2005. In 2014, no *Hydrilla verticillata* was seen during sampling on Lake Harris. However, in 2017 hydrilla was abundant in most of the east and west portions of the lake and collected in the benthic samples on both sides of the lake. There were large amounts of hydrilla entangled on the anchor at multiple sampling stations. Lake Harris East also had some native submerged vegetation in the benthic samples including *Vallisneria Americana* (eel grass) and *Chara spp.* (muskgrass). The east side of Lake Harris was predominantly sand with some coarse particulate organic material and muck. Lake Harris West received a Hulbert Index score of 8 and Lake Harris East received a Hulbert Index score of 9. The Hulbert Index is based on the number of pollution-intolerant lake macroinvertebrate species present. Therefore, higher Hulbert Index scores indicate a greater number of pollution sensitive species present or better water quality. Lake Harris East had 5 and Lake Harris West had 6 species of macroinvertebrates which are sensitive to pollution.

LCI SCORES

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2011</u>	<u>2014</u>	<u>2017</u>
Harris East	44.53	31.21	38.00	33.46	40.92	33.00	57.95
Harris West	20.76	40.36	30.14	37.75	39.46	39.15	45.98



caddisfly Trichoptera *Oecetis* sp. C with case.



Significance

The St. Johns River Water Management District is proposing a plan to increase the fluctuations in the water level in all the Harris Chain of Lakes. This could help Lake Harris-Little Lake Harris recover from pollution impacts by drying out large portions of mucky shoreline and helping to re-establish the aquatic plants essential for fisheries habitat and the overall biota of the lake. Improvement of the aquatic plant community is an important step toward improvement of the benthic macroinvertebrate community (and resulting LCI scores). In addition, water quality may be improving because in recent years any water released from Lake Apopka has been treated through the NuRF (or nutrient reduction facility) before it is released into the Harris Chain of Lakes. The Lake County Water Authority will continue to monitor the macroinvertebrates in Little Lake Harris in order to assess ecosystem health.

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 shorezone 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.



For more information, please contact:
Lake County Water