

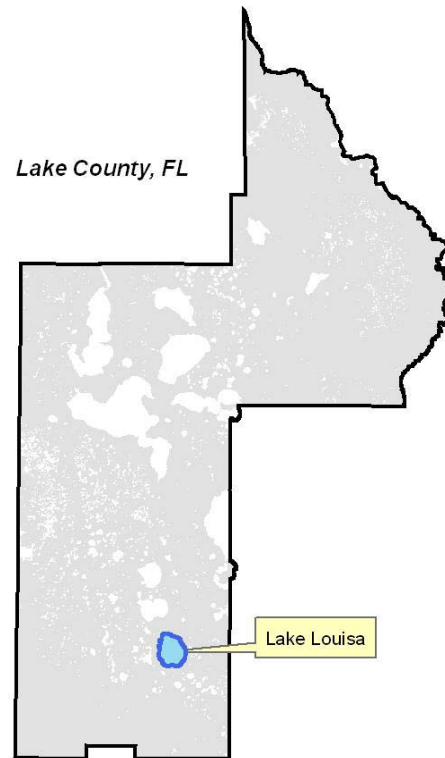


Lake Louisa EcoSummary August & September 2009

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 south Lake County, the 3,161-acre Lake Louisa is surrounded largely by a mix of residential, natural (wetlands and forest/rangelands) and commercial lands. Lake Louisa is part of the Clermont Chain of Lakes and is designated as one of the Outstanding Florida Waters (OFW). An OFW is a water designated worthy of special protection because of its natural attributes. This special designation is intended to protect existing good water quality. Because Lake Louisa 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 Louisa North were taken in August of 2009 and 12 benthic grabs for Lake Louisa South in September of 2009.



Results

Lake Louisa North received a very good rating on the LCI. However, Lake Louisa South dropped to a poor rating. Fifteen different macroinvertebrate taxa were collected on the north and south portions of the lake. On Lake Louisa North, the most abundant macroinvertebrates collected were the Chironominae *Polypedilum halterale* group and the Oligochaete tubificid or aquatic worm *Limnodrilus hoffmeisteri*. These two taxa accounted for 31.3% and 27.4% of the total population of macroinvertebrates present in the north portion of the lake. The pollution sensitive *Hexagenia* mayfly comprised 7.8% of the total macroinvertebrates in the north portion of the lake. The mean LCI score dropped from 72.82 in 2005 to 58.38 in 2006 and from 48.28 in 2007 to 42.70 in 2009. In addition, the number of pollution sensitive caddisfly species found in the north portion of the lake dropped from 26% of the total population of macroinvertebrates in 2005 to 16% in 2006 and from 3.9% in 2007 to 1% in 2009.

The Chironominae *Polypedilum halterale* group and Oligocheate tubificid worms were also the predominate taxa present in the south portion of Lake Louisa and each group comprised 30% of the total population of macroinvertebrates in the south portion of the lake. There were no pollution sensitive caddisfly species or *Hexagenia* mayfly species present in the south portion of the lake in 2009. The median LCI score improved from a good 38.53 in 2005 to a very good 55 in 2006 and an improved very good 60.66 in 2007. However, the score has dropped to 26.88 in 2009. The south portion of Lake Louisa appears to be especially sensitive to the amount of rainfall/ stormwater sources entering the lake. The first LCI performed in 2005, followed an extensive amount of rainfall (and three hurricanes in 2004). The heavier rainfall levels in 2004 were immediately followed by years of drought ending with the rainfall beginning in 2009. During the years of drought/ decreased stormwater inputs, the lake was able to recover somewhat in the south portion of Lake Louisa. However, the steady declining LCI scores in the north portion of the lake may indicate a trend of decline in the overall lake biota.



caddisfly Trichoptera *Oecetis* sp. C with case.
Photo courtesy of Dana Denson RCID

The benthic samples taken in both portions of the lake were predominately sand and coarse particulate organic material. Lake Louisa North LCI received a Hulbert Index score of 9. Lake Louisa South received a Hulbert Index score of 3. 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.

Significance

Lake Louisa is still in relatively good condition, as is reflected in the biota (LCI) and in water chemistry. However, the declining trend in LCI scores warrants concern over possible anthropogenic (man made) sources of pollution from stormwater runoff in the Lake Louisa watershed. While there may be fluctuations in lakes over time due to natural conditions (i.e. weather, wetland influences, cloud cover, etc.) currently there are only 4 years (2005, 2006, 2007 and 2009) of LCI sampling data to use for evaluation. The Lake County Water Authority will continue to monitor the Clermont Chain of Lakes, one of the Outstanding Florida Waters, to ensure continued good water quality.

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 Authority 107 North Lake Avenue Tavares, FL 32778
(352) 343-3777