



## Lake Eustis 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 7,806-acre Lake Eustis is surrounded largely by a mix of residential, commercial and agricultural lands. Discharges from Lake Dora represented 33.6% of estimated Total Phosphorus (TP) loading and 50.0% of estimated Total Nitrogen (TN) loading. Discharges from Lake Harris-Little Lake Harris represented 9.3% of estimated TP loading and 26.1% of estimated TN loading to Lake Eustis. Aside from Lake Dora discharges, the largest single source of TP loading was from agriculture other than muck farms, which represented 18.9% of estimated TP loading and 4.6% of estimated TN loading. Additionally, in previous years, the City of Eustis discharged waste water into Trout Lake, which subsequently entered Lake Eustis at the north east corner of the lake. There are significant differences in the sediment substrate in Lake Eustis, with the north half dominated by muck and the south half still partially comprised of sand. Because Lake Eustis is larger than 1000 acres in size, two separate LCIs were performed, one on the north end and one on the south end. The benthic grabs for Lake Eustis were taken in February of 2008.



### Results

Both Lake Eustis North and Lake Eustis South received a poor rating on the LCI. Eleven different macroinvertebrate taxa were collected on the north portion. Thirteen taxa were collected on the south. On Lake Eustis South the most abundant macroinvertebrate collected was the aquatic snail Hydrobiidae, comprising 26% of the total population of macroinvertebrates. *Chaoborus punctipennis* (phantom midge) was the predominate single taxa present in the north portion of Lake Eustis. Chironomids or midges were 44.8% of the total population of macroinvertebrates in the south portion and 64.7% in the north portion of the lake. Lake Eustis North LCI received a Hulbert Index score of 2. Lake Eustis South received a Hulbert Index score of 1. 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. Eight of the twelve benthic samples taken in the south portion of the lake were predominately muck while all of the twelve northern lake samples were primarily muck.

#### LCI SCORES

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>
<b>Eustis South</b>	<b>19.88</b>	<b>33.12</b>	<b>30.85</b>	<b>26.69</b>
<b>Eustis North</b>	<b>26.59</b>	<b>26.49</b>	<b>22.89</b>	<b>21.18</b>



Hydrobiidae snails

#### **Significance**

The Lake County Water Authority has an off-line alum system or NuRF (Nutrient Reduction Facility) located on the Apopka-Beauclair Canal that came online in March of 2009. This will reduce the total phosphorus load from Lake Apopka by as much as 81% annually. Elimination of such a large upstream source of total phosphorus could dramatically improve water quality in Lake Eustis and other downstream lakes. This could increase recreation on the lake by eliminating persistent algal blooms, eventually leading to reestablishment of beneficial vegetation, improved pollution sensitive macroinvertebrate populations with increased macroinvertebrate diversity and a more productive sportfish

population. The Lake County Water Authority will continue to monitor the macroinvertebrates in Lake Eustis in order to assess the NuRF project impacts on the 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 Authority 107 North Lake Avenue Tavares, FL 32778  
(352) 343-3777

## References

Fulton, R.S., III. 1995. *External nutrient budget and trophic state modeling for lakes in the Upper Ocklawaha River Basin*. Technical Publication SJ95-6. Palatka, Fla.: St. Johns River Water Management District.

Fulton, R.S., III, C. Schluter, T.A. Keller, S. Nagid, W. Godwin, D. Smith, D. Clapp, A. Karama, and J. Richmond. 2004. *Pollutant Load Reduction Goals for seven major lakes in the Upper Ocklawaha River Basin*. Technical Publication SJ2004-5, Palatka, Fla.: St Johns River Water Management District.