Lake Beauclair EcoSummary  
October and November 2014

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 with a portion of the lake located in Orange County, 1119-acre Lake Beauclair is surrounded largely by a mix of residential, natural and recreational lands. Lake Beauclair had nutrient loadings more than four times that of any other lake in the Upper Ocklawaha River basin largely due to incoming flow from the Apopka-Beauclair Canal. Lake Beauclair has a turnover rate of approximately 56 days (or 6.5 turns/year) under average conditions. In recent years, the rainfall levels have been well below average. Because Lake Beauclair is larger than 1000 acres in size, two separate LCIs were performed, one on the east side and one on the west. The 12 benthic grabs for Lake Beauclair East and 12 benthic grabs for Lake Beauclair West were taken in October and November 2014.

Results

Lake Beauclair West received a poor rating and Lake Beauclair East received a very poor rating on the LCI. Sixteen different macroinvertebrate taxa were collected on the west side, and seven on the east. Macroinvertebrates are an integral part of the food chain which supports other invertebrates, fish, birds etc. On Lake Beauclair East, the most abundant macroinvertebrate collected was the Diptera Chaoborus punctipennis. Diptera made up 83% of the macroinvertebrates collected in 2014, 59% of the macroinvertebrates collected in 2013, and 63% of the macroinvertebrates collected in 2012, on Beauclair East. This was a change in dominate taxa from 2010, when oligocheates made up 67% of macroinvertebrates collected on Beauclair East. The chironomid Cladotanytarsus viridiventrius (previous name Cladotanytarsus sp. B), Chaoborus punctipennis, and the oligocheate, tubificid worm, Limnodrilus hoffmeistri comprised the majority of macroinvertebrates at 23%, 8% and 41%, respectively on Lake Beauclair West. The sediment in 8 of the 12 benthic grabs in Beauclair East was predominately muck and coarse particulate organic matter. Beauclair West was predominately sand in 4 of the 12 benthic/sediment grabs.
The dipteran (fly) larvae present consisted of pollution tolerant species such as *Chironomus sp.*, *Cladotanytarsus viridiventrius*, and *Chaoborus punctipennis*. The mean LCI scores slightly increased in Lake Beauclair West and slightly decreased Lake Beauclair East (see table below). Lake Beauclair East received a Hulbert Index score of 3 and West received Hulbert Index scores of 2. The HI is based on the number of pollution-intolerant lake macroinvertebrate species present. The 2014 Secchi readings or water clarity measurements were 0.22 meters for Beauclair West and 0.275 for Beauclair East.

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<tbody>
<tr>
<td>Beauclair East</td>
<td>24.53</td>
<td>29.12</td>
<td>22.83</td>
<td>19.20</td>
<td>25.03</td>
<td>20.87</td>
<td>27.14</td>
<td>10.72</td>
<td>24.43</td>
<td>21.05</td>
<td>15.76</td>
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Lake Beauclair

![Graph showing LCI scores for Beauclair East and Beauclair West from 2004 to 2014. The graph displays the LCI scores on the y-axis and the years on the x-axis. The bars for each year show the LCI scores for both lakes, with Beauclair East in blue and Beauclair West in purple.](image)
Aquatic worm

**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 in Lake Beauclair (from Lake Apopka) by as much as 81% annually. Over the coming years, Lake Beauclair should improve from a nutrient-rich hypereutrophic lake to a considerably ‘healthier’ mesotrophic lake. This could increase recreation on the lake by eliminating persistent algal blooms, increasing water clarity and eventually leading to reestablishment of beneficial vegetation and a more productive sportfish population. The flow from Lake Apopka has been low since 2006 (<10 cfs) with periods of time when flows have been completely cut off by the SJRWMD due to low lake levels in Lake Apopka. Over time and with increased flow (with increased rainfall), improvements to the lakes in the Harris Chain, should improve. In addition, the LCWA competed dredging (June 2013) in Lake Beauclair where high levels of phosphorus (the principal polluting nutrient), had accumulated in the sediment over the decades from sources originating in Lake Apopka. The Lake County Water Authority will continue to monitor the macroinvertebrates in Lake Beauclair in order to assess the NuRF and sediment dredging 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.

References
