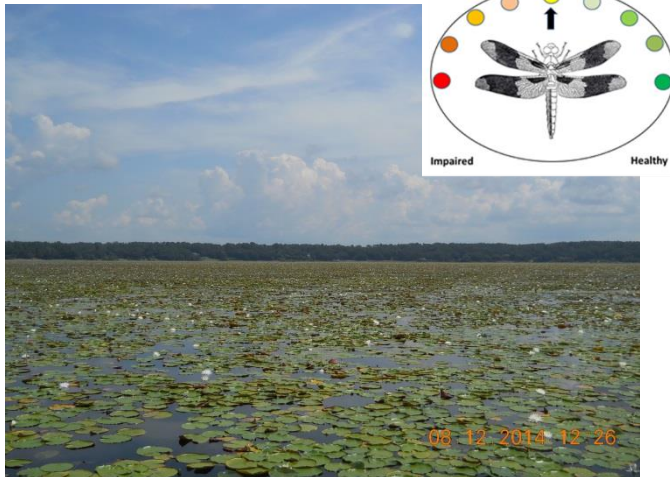


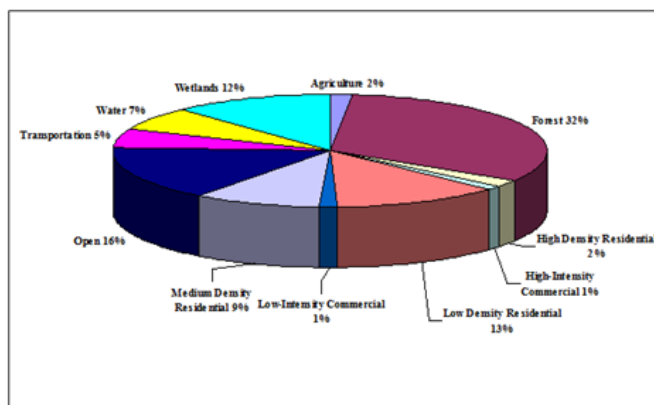
Waterbody: Lake Jackson



Basin: Lake Jackson

Lake Jackson is an approximately 4,000 acre, shallow, flat bottomed, prairie lake with two major sinkholes and is located north of the City of Tallahassee. Lake Jackson is a valuable biological, aesthetic, and recreational resource of Leon County and was designated (along with the neighboring Lake Carr and Mallard Pond) as an Aquatic Preserve in 1974 for the primary purpose of preserving and maintaining the biological resources in their natural condition.

As shown in the following pie chart, approximately 33% of land use in the 27,262 acre Lake Jackson Basin is residential, commercial, agriculture, or transportation. Increases in stormwater runoff, and waterbody nutrient loads can often be attributed to these types of land uses.



Background

Healthy, well-balanced lake communities may be maintained with some level of human activity, but excessive human disturbance may result in waterbody degradation. Human stressors may include increased inputs of nutrients, sediments, and/or other contaminants from watershed runoff, adverse hydrologic alterations, undesirable removal of habitat or riparian buffer vegetation, and introduction of exotic plants and animals. Water quality standards are designed to protect designated uses of the waters of the state (e.g., recreation, aquatic life, fish consumption), and exceedances of these standards are associated with interference of the designated use.

Methods

Surface water, sediment sampling, and a Lake Vegetation Index (LVI) was conducted to determine the health of Lake Jackson and met the collection and analysis requirements of the Florida Department of Environmental Protection (FDEP).

Results

Nutrients

Low water levels caused by drought and sinkhole activity meant certain water quality stations could not be sampled during some months. After Tropical Storm Fay (August 2008), Lake Jackson water levels reached full pool conditions; however, subsequent drought conditions lowered lake levels to where staff was unable collect water chemistry samples in 2012 and the first quarter of 2013. Water levels continued to rise in the latter part of 2013 and have reached full pool in 2014. Objective results of nutrient concentration continued to be skewed by water level fluctuations. The effects of reflooding will continue to be documented.

The nutrient thresholds and results are found in Table 1. According to FDEP requirements, Numeric Nutrient Criteria (NNC) (expressed as an annual geometric mean) cannot be exceeded more than once

in a three year period. Chlorophyll *a* levels were exceeded in 2009 and 2011 while total phosphorus levels were exceeded in 2008. Chlorophyll *a* (2.6 µg/L) was below the criteria in 2014. Even though the 2014 total phosphorus (0.02 mg/L) and total nitrogen (0.69 mg/L) values were equal to or higher than the 2011 values, the results are not considered exceedances of the criteria, since chlorophyll *a* levels did not exceed the criteria.

Table1. FDEP’s chlorophyll *a*, total nitrogen and phosphorus criteria for lakes applied to Lake Jackson. Results in bold signify exceedances of the State criteria. Due to low water the numeric nutrient criteria data requirements could not be calculated for years 2012-2013.

Clear Lake, Low Alkalinity	Chlorophyll- <i>a</i> 6.0 µg/L	Total Nitrogen Threshold 0.51-0.93 mg/L	Total Phosphorus Threshold 0.01-0.03 mg/L
2004	2.2	0.33	0.01
2005	3.2	0.29	0.03
2006	3.0	0.63	0.03
2007	2.1	0.77	0.03
2008	5.7	0.60	0.04
2009	8.4	0.49	0.02
2010	3.2	0.58	0.02
2011	6.9	0.61	0.02
2012-2013	-	-	-
2014	2.6	0.69	0.02

Dissolved Oxygen

As Figure 1 shows, several Lake Jackson stations showed percent dissolved oxygen (DO) saturation values that did not meet Class III water quality criteria. This was not unexpected, since the Lake Jackson stations are shallow stations normally covered with

vegetation, which prevents rapid water exchange with the larger area of the lake. Plant respiration (samples were often taken in the morning hours), in addition to organic rich sediments, also contributed to the low DO saturation values.

Other Parameters

Fecal coliform values (1100/100 mL) at station J14 exceeded class III criteria during the August 2014 sampling event. It is unknown why values were elevated. Other water quality parameters appear to be normal for the area and no other impairments were noted.

Floral Assessment

The Lake Vegetation Index score for Lake Jackson was 52, placing the lake’s vegetative community in the healthy category.

Forty five species were found during the survey. The native species fanwort (*Cabomba caroliniana*) and fragrant waterlily (*Nymphaea odorata*), along with exotic alligator weed (*Alternanthera philoxeroides*), were the most dominant species in the lake. Other native vegetation included red maple (*Acer rubrum*), buttonbush (*Cephalanthus occidentalis*) and maidencane (*Panicum hemitomon*).

Unfortunately, Chinese tallow tree (*Sapium sebiferum*), wild taro (*Colocasia esculenta*), torpedo grass (*Panicum repens*), water spangles (*Salvinia minima*), and water hyacinth (*Eichhornia crassipes*), all listed as Category I Invasive Exotics by the Florida Exotic Pest Plant Council were found in Lake Jackson. Alligator weed (*Alternanthera philoxeroides*) is a Category II Invasive Exotic found in the lake. Additionally, the exotic vaseygrass (*Paspalum urville*) was also found in and near the lake.

[Click here for more information on the Lake Jackson LVI.](#)

[Click here for more information on common exotic and invasive plants in Leon County wetlands and waterbodies.](#)

Fish Consumption Advisory

The Florida Department of Health has issued consumption limits for certain fish in Lake Jackson due to elevated levels of mercury.

[Click here for more information about fish consumption advisories in Leon County.](#)

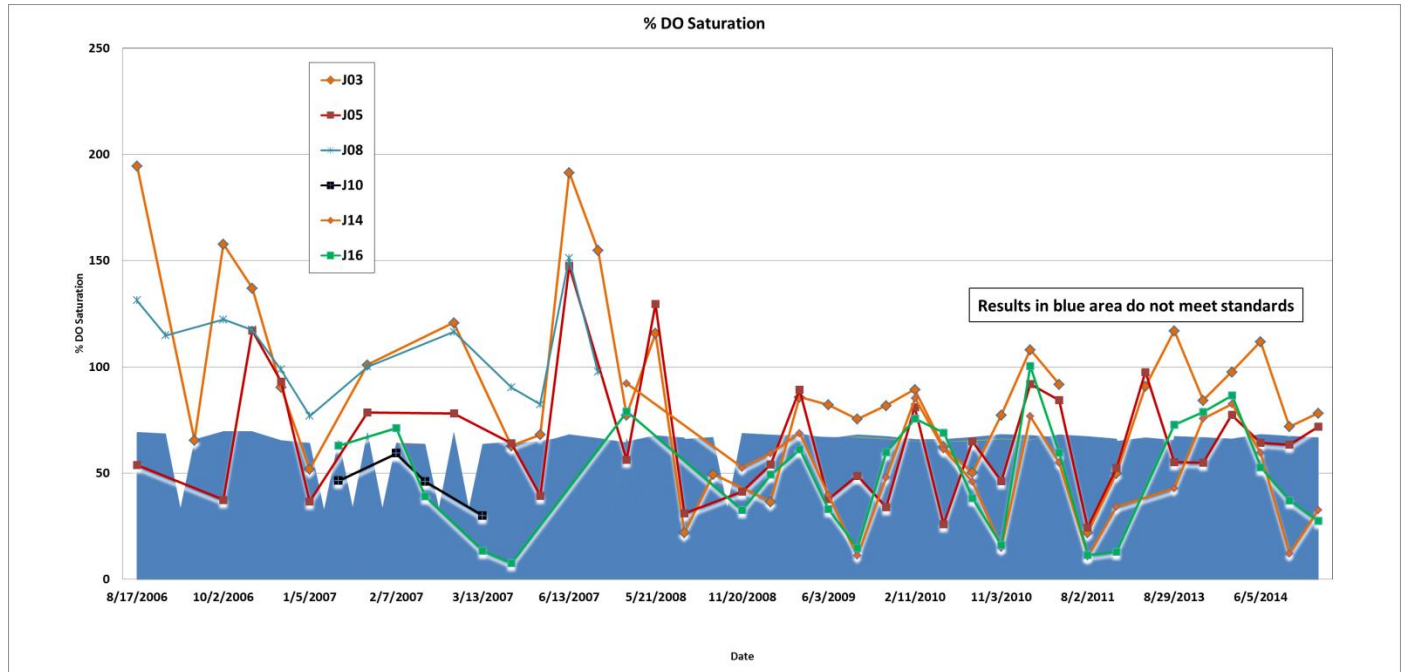


Figure 1. Dissolved Oxygen Percent Saturation results for Lake Jackson.

Conclusions

Based on ongoing sampling, Lake Jackson NNC chlorophyll *a* (2.6 µg/L) was below the criteria in 2014. Even though the 2014 total phosphorus (0.02 mg/L) and total nitrogen (0.69 mg/L) values the equal to or higher than the 2011 values, the results are not considered exceedances of the criteria, since chlorophyll *a* did not exceed the criteria. Ongoing sampling showed percent dissolved oxygen (DO) saturation values did not always meet Class III water quality criteria. This was not unexpected, since the Lake Jackson stations are shallow stations normally covered with vegetation, preventing rapid water/atmospheric exchange. Plant respiration and organic rich sediment also contributed to low DO saturation values. Fecal coliform values (1100/100 mL) at station J14 exceeded class III criteria during the August 2014 sampling event. The Lake Vegetation Index score for Lake Jackson was 52,

placing the lake’s vegetative community in the healthy category.

Thank you for your interest in maintaining the quality of Leon County’s water resources. Please feel free to contact us if you have any questions.

Contact and resources for more information

www.LeonCountyFL.gov/WaterResources

[Click here to access the results for all water quality stations sampled in 2014.](#)

[Click here for map of watershed – Sample sites JL01, J03, J05, J14 and J16.](#)

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