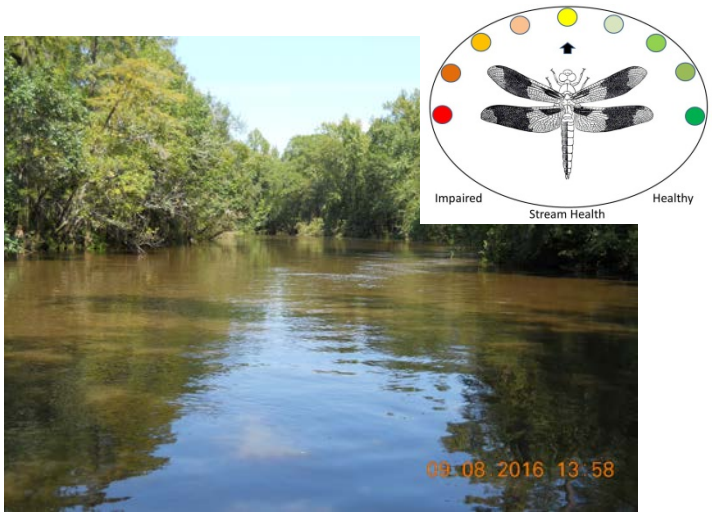
Waterbody: Ochlockonee River

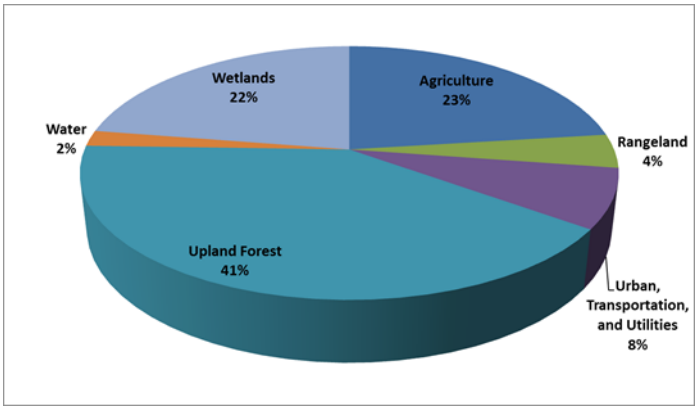


Basin: Ochlockonee River

The Ochlockonee River originates in south-central Georgia and flows about 206 miles south to Ochlockonee Bay in Florida, draining approximately 2,400 square miles in all or part of eleven counties between the two states. The river is impounded by the Jackson Bluff Dam, forming Lake Talquin.

The river has been declared an Outstanding Florida Water by the Florida Department of Environmental Protection (FDEP), identified as an Integrated Wildlife Habitat (formerly known as a Strategic Habitat Conservation Area) by the Florida Fish and Wildlife Conservation Commission, and parts of the Ochlockonee River have been designated critical habitat for mussels by the U. S. Fish and Wildlife Service (F.A.C. 62-302, 2006, and Federal Register, 2007). Unfortunately, past agricultural and silvicultural practices, as well as point source problems, have led to increased turbidity, higher nutrient concentrations, bacterial problems, and increased sedimentation of the river.

As shown in the following pie chart, approximately 35% of land use in the 1,019,525 acre Lake Talquin Basin upstream of the southernmost sample station is agriculture, urban, transportation or utilities. Increases in stormwater runoff and waterbody nutrient loads can often be attributed to these types of land uses.



Background

Healthy, well-balanced river 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 sampling was conducted to determine the health of the Ochlockonee River and met the collection and analysis requirements of the FDEP.

Results

Nutrients

According to FDEP requirements, Numeric Nutrient Criteria (expressed as an annual geometric mean) cannot be exceeded more than once in a three year period. The nutrient thresholds and results are found in Table 1. The State criteria were exceeded several times for nitrogen at the furthermost upstream site (Fairbanks Ferry Station), five times (2006, 2007, 2010, 2015 and 2016) at the Highway 90 station and exceeded phosphorus levels only once at the

Fairbanks Ferry Station. This suggests that excessive nutrients are being released into the river in the upper reaches, probably as the result of excessive erosion and/or fertilizer application. As the nutrients move downstream, they are assimilated through biological activity, as demonstrated by the lower levels in the downstream stations. The assimilation of nutrients is most noticeable with nitrogen, while recent phosphorus results (2016) show that levels are being assimilated relatively slowly.

Table 1. FDEP's total nitrogen and phosphorus criteria for rivers applied to Ochlockonee River. Results in bold signify exceedances of the State criteria.

Ochlockonee River	Instream Protection Criteria TN (1.03 mg/L)			Instream Protection Criteria TP (0.18 mg/L)		
Year	**Och at FF**	**Och at 90**	**Och at 20**	**Och at FF**	**Och at 90**	**Och at 20**
2000	**1.63**	-	0.14	**0.20**	-	0.06
2001	**1.21**	-	0.75	0.18	-	0.07
2002	**2.08**	-	0.76	0.14	-	0.08
2003	0.68	-	0.34	0.07	-	0.05
2004	0.68	-	0.64	0.06	-	0.03
2005	0.92	-	0.52	0.07	-	0.04
2006	**1.07**	**1.12**	0.70	0.09	0.07	0.04
2007	**1.56**	**1.16**	0.68	0.14	0.13	0.07
2008	**1.41**	1.02	0.70	0.16	0.12	0.07
2009	0.88	0.67	0.79	0.11	0.10	0.07
2010	**1.32**	**1.07**	0.72	0.13	0.09	0.06
2011	**1.60**	0.69	0.80	0.13	0.07	0.06
2012	**1.26**	0.99	0.77	0.14	0.15	0.06
2013	**1.17**	0.92	0.85	0.12	0.12	0.11
2014	**1.09**	0.88	0.68	0.11	0.08	0.06
2015	**1.20**	**1.08**	0.73	0.12	0.12	0.07
2016	**1.10**	**1.13**	0.79	0.14	0.12	0.07

Dissolved Oxygen (DO)

While all three stations occasionally did not meet Class III water quality standards for DO (Figure 1), the Highway 20 station (located downstream from the Jackson Bluff Dam) was the most notable. This may be attributed to the operation of the dam. The gates of the Jackson Bluff Dam have the ability to release water from either the surface (relatively oxygenated) or middle layer of water (lower levels of oxygen). During events where the water being released is mostly the "middle" layer of water, DO levels would tend to be depressed. Low flow conditions can also contribute to depressed oxygen levels, which may affect all stations along the river.

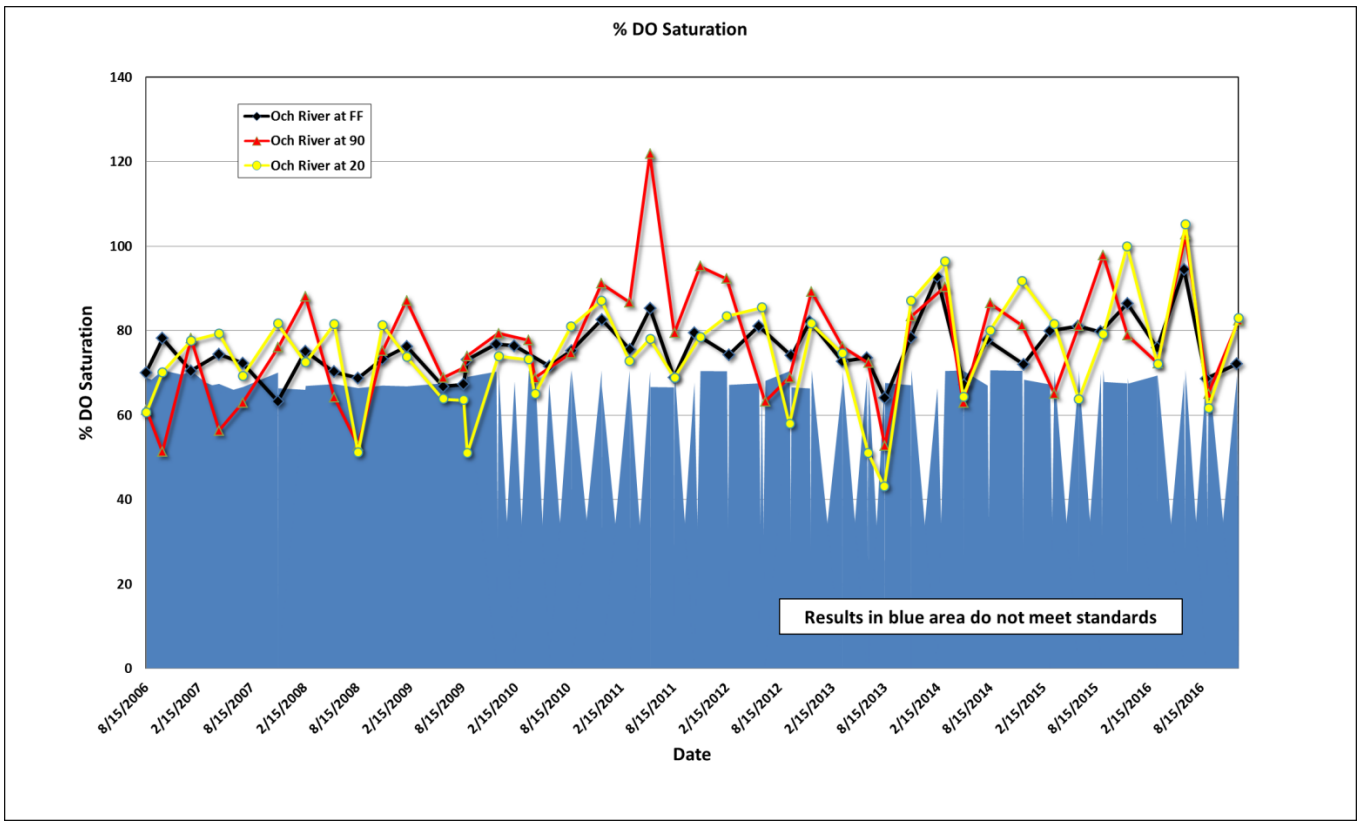


Figure 1. Dissolved Oxygen Percent Saturation results for the Ochlockonee River.

Escherichia coli

The *E. coli* water quality limit of > 410, 10% threshold value of samples collected over a 30 day period was exceeded at the *Och at FF (Fairbanks Ferry)* Station (490/100 mL) during the December 2016 sampling event.

Other Parameters

Chlorophyll-*a* results for the station *Och at 20* were elevated during June (37.3 µg/L), September (21.8 µg/L) and December (20.2 µg/L) 2016 sampling events. Since the station is relatively close to the dam, it is assumed that the majority of the algal population (chlorophyll-*a* indirectly measures) is being flushed out of Lake Talquin and levels would not normally be so elevated in the river. Other water quality parameters appear to be normal for the area and no other impairments were noted.

Fish Consumption Advisory

The Florida Department of Health has issued consumption limits for certain fish in the Ochlockonee River due to elevated levels of mercury.

Click here for more information about fish consumption advisories in Leon County.

Conclusions

Based on ongoing sampling, the upper reaches of the Ochlockonee River did not meet the nitrogen nutrient threshold for the Panhandle East Region for several years. Phosphorus levels exceeded the nutrient threshold only once in the 17 years the river has been monitored. The sample stations occasionally did not meet Class III water quality standards for DO; the Highway 20 station (located downstream from the Jackson Bluff Dam) was the most notable. The *E. coli* limit was exceeded during the December 2016 sampling event. Chlorophyll-*a* results for the station *Och at 20* were elevated during the last three quarters of 2016.

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 2016.

Click here for a map of the watershed – Sample Sites 100, OCHat90 and T02.

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