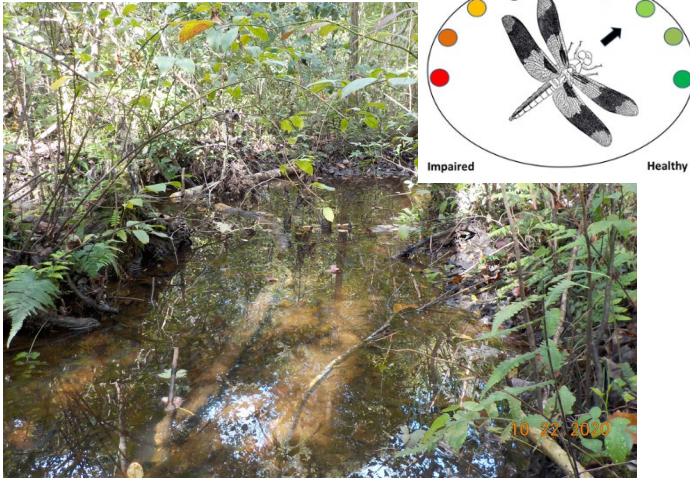


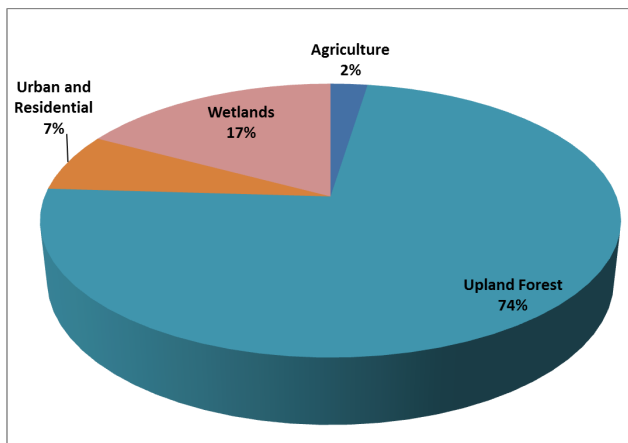
Waterbody: Tall Timbers Creek



Basin: Lake Iamonia

Tall Timbers Creek is a tannic stream located in northwestern Leon County. The stream flows south under County Road 12 through the Tall Timbers Research Station and Land Conservancy, eventually entering Lake Iamonia on the north shore of the lake.

While the following pie chart shows the majority of the 80-acre watershed upstream of the sample station is relatively undeveloped, agriculture, urban and residential uses make up approximately 9% of the watershed. Increases in stormwater runoff and waterbody nutrient loads can often be attributed to these types of land uses.



Background

Healthy, well-balanced stream 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 Tall Timbers Creek and met the collection and analysis requirements of the Florida Department of Environmental Protection (FDEP).

Results

The nutrient thresholds and results are found in Table 1. According to FDEP requirements, Numeric Nutrient Criteria (expressed as an annual geometric mean) cannot be exceeded more than once in a three-year period. When viewing Table 1, the absence of a number means there were not enough data collected (due to lack of water or low water levels) to calculate a result. When data requirements were met (e.g., four samples collected in a calendar year), nutrient values were shown to not exceed the state criteria.

Dissolved Oxygen (DO)

As Figure 1 shows, Tall Timbers Creek seldom met the Class III criteria for DO. Low gradient, tannic streams typically have low DO levels which can be further exacerbated by low water conditions.

Escherichia coli (*E. coli*)

The *E. coli* water quality limit of > 410 in 10% of samples collected over a 30-day period was exceeded for the 2nd (650/100 mL) quarter of 2017. The September 2018 result, while relatively high (310/100 mL), did not exceed the criteria. Since the watershed is relatively undeveloped, elevated *E. coli* levels are probably the result of wildlife in the area. There have been no exceedances since the September 2018 result.

Table 1. FDEP's total nitrogen and phosphorus criteria for streams applied to Tall Timbers Creek. The absence of data means there was not enough data collected (due to lack of water) to fulfill data requirements.

Tall Timbers Creek	Total Nitrogen Threshold 1.03 mg/L	Total Phosphorus Threshold 0.18 mg/L
2006- 2007	-	-
2008	0.22	0.03
2009	0.17	0.04
2010	0.23	0.04
2011- 2012	-	-
2013	0.11	0.03
2014	0.21	0.02
2015	0.24	0.06
2016	0.13	0.02
2017	0.13	0.03
2018	0.22	0.04
2019	0.28	0.04
2020	-	-

Other Parameters

Other water quality parameters appear to be normal for the area and no other impairments were noted.

Stream Condition Index

The Stream Condition Index (SCI) score was healthy, although the score this year is about 15 points lower than the previous SCI score from 2017. This result may be related to the very dry spring and late summer, and the associated low flow conditions within

the system at that time. A total of 56 taxa were recorded, with 25 being chironomid species. The most abundant single taxa collected was the mayfly *Habrophlebiodes brunneipennis*. Both long-lived and sensitive taxa were represented in the SCI sample with 5.4% of taxa being long-lived (three taxa) and 12.5% being sensitive (seven taxa). The Ephemeroptera, Plecoptera, Trichoptera (EPT) fauna are widely regarded as the groups of aquatic insects that contain many pollution sensitive taxa. In total, four EPT taxa were recovered in the SCI. Compared to the 2017 sampling, long-lived taxa were reduced from four to three and sensitive taxa were reduced from ten to seven. Contributing to these reductions are the absence in 2020 of the trichopterans *Diplectrona modesta* and *Lype diversa*, both of which were present in the 2017 collection. However, of note is the continued presence of the long-lived and sensitive trichopteran *Heteroplectron americanum*, a species that is not common in Florida and appears confined to small, often spring fed ravine streams of the panhandle. The Florida population of *Heteroplectron americanum* represents a disjunct distribution between the southern Appalachians and the Florida panhandle. In addition, a new record for Florida was established by the recovery of the heteropteran *Sigara virginiensis*, representing a range extension from the previously identified southern limit of Georgia and the Carolinas.

The Habitat Assessment score characterizes the stream in the high suboptimal to low optimal category. The only physical negatives reported for this sampling period was minor smothering of some habitats by iron sulfur bacteria in the lower half of the transect reach, backwater pooling in the upper portion of the reach, and significant exotic vegetation in the understory of the riparian floodplain.

Table 3. Stream Condition Index results for Tall Timbers Creek.

Tall Timbers Creek	Rep 1	Rep 2
Stream Condition Index Metrics Scores		
Total Taxa	8.21	7.86
Ephemeroptera Taxa	1.25	1.25
Trichoptera Taxa	1.11	0
% Filter Feeder	0.79	1.16
Long-lived Taxa	8	6
Clinger Taxa	2	2
% Dominance	7.85	8.38
% Tanytarsini Taxa	7.72	7.79
Sensitive Taxa	4	2.67
% Tolerant Taxa	2.52	2.61
SCI Vial Score	48.28	44.13
Stream Condition Index Score	46	
Score Interpretation	Healthy	

Table 4. Habitat Assessment results for Tall Timbers Creek.

Tall Timbers Creek	Score	Category
Substrate Diversity	14	Optimal
Substrate Availability	12	Marginal
Water Velocity	13	Suboptimal
Habitat Smothering	15	Marginal
Artificial Channelization	20	Optimal
Bank Stability	10, 10	Optimal, Optimal
Riparian Zone Width	10, 10	Optimal, Optimal
Riparian Vegetation Quality	8, 8	Optimal, Optimal
Final Habitat Assessment Score	130	
Interpretation	Suboptimal	

Conclusions

Based on ongoing sampling, Tall Timbers Creek met the nutrient thresholds for the Panhandle East Region. While DO results did not meet Class III water quality standards, low gradient tannic streams normally have low DO values which, in this case, were further exacerbated by the typically low flow condi-

tions. The SCI score was healthy, and the Habitat Assessment score characterizes the stream in the high suboptimal to low optimal category. Other water quality parameters appear to be normal for the area and no other impairments were noted.

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.LeonCountyWater.org

[Click here to access the results for all water quality stations sampled in 2020.](#)

[Click here for a map of the watershed – Sample Site 66.](#)

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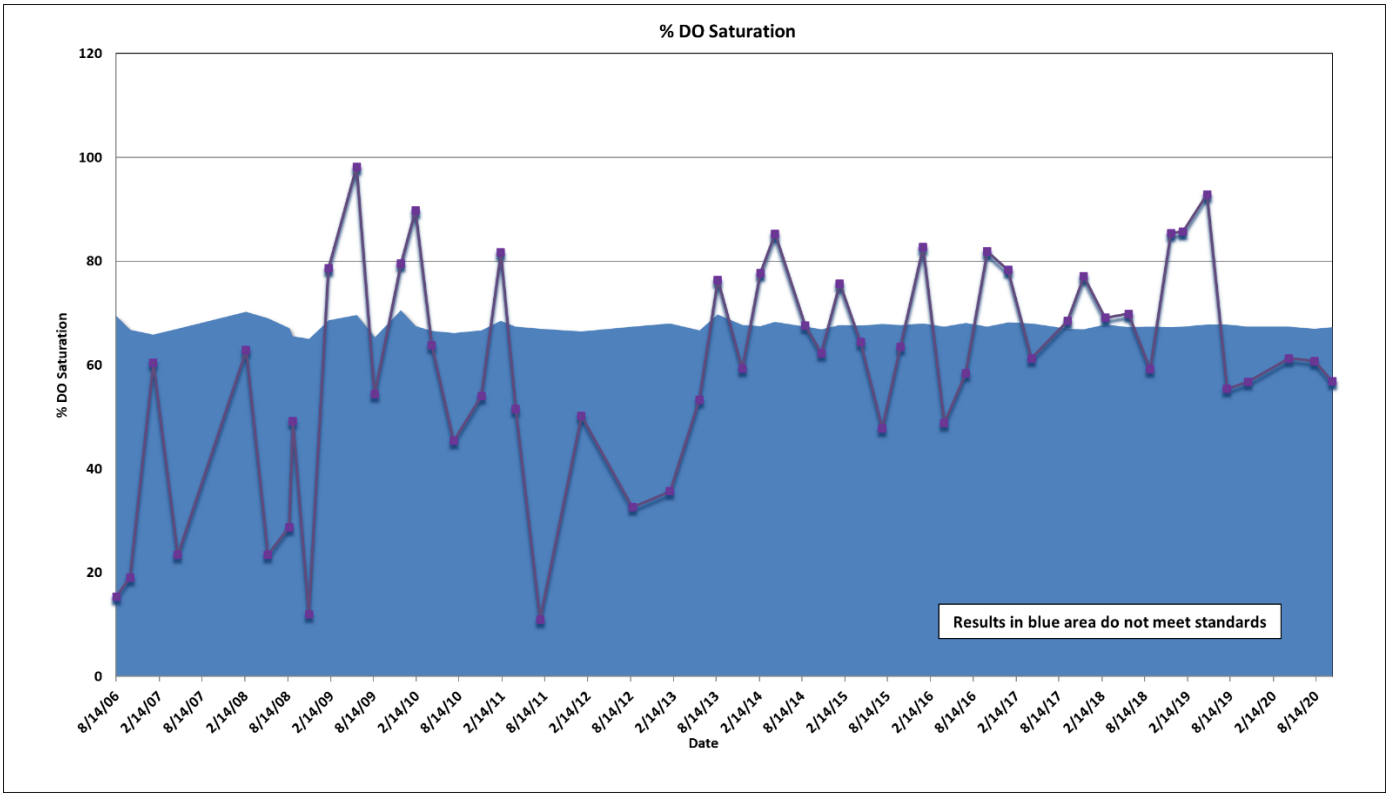


Figure 1. Dissolved Oxygen Percent Saturation results for Tall Timbers Creek.