White Lake Phytoplankton Trends

- July 2013, first phytoplankton bloom, triggered by extreme precipitation events
- Algal blooms can result in 2-unit increase in pH
- Desmids generally dominate phytoplankton community
- Increased filamentous cyanobacteria in summer 2016, and same species developed into a full-scale bloom in late summer 2017
- Diversity increasing
- Very dynamic system

A Comparison of White Lake Algae Data for July, From 2013-2020

	2013	2015	2016	2017	2018	2019	2020
Secchi Depth (m)	1.25	2.6	ND	1.5	1.75	1.5	1.0
Turbidity (NTU)	4.3	1.7	2.0	3.0	1.9	1.9	2.6
Chl a (µg/L)	27.7	16.3	6.2	9.6	6	8.5	9.7
Algal Cells/mL	114,533	2,367	45,433	26,366	150,643	38,033	169,176
Dominant Taxa (#cells/mL)	*Cosmarium* (99%)	*Staurastrum (35%)*	*Planktolyngbya (95%)*	*Gonatozygon* (48%) *Planktolyngbya* (49%)	*Synechococcus (43-71%)*	*Synechococcus (36%) Staurastrum (34%)*	*Staurodesmus (43.6%)*
Algal Biovolume (mm³/m³)	28,400	267	1,400	1,967	18,307	ND	40,965
Dominant Taxa (Biovolume)	*Cosmarium* (100%)	*Oocystis (40%)*	*Planktolyngbya Peridinium*	*Gonatozygon* (53%)	*Staurastrum (79%)*	*Staurastrum*	*Staurodesmus (82%)*
pH Range (su)	8.0-8.3	6.0-6.7	6.3-6.7	6.6-6.8	6.5-6.9	6.5-6.6	6.9-7.0

June pH range 6-6.8, mean chl *a* 2.5 µg/L

17" of rain in June, 11.25" in July

Water clear, but looked green (due to abundant bottom vegetation?)

Chl a and biovolume quite different (picoplankton contribution?)

White Lake data 2013-2017 collected and analyzed by NC DEQ; data from 2018-2020 collected and analyzed by LIMNOSCIENCES and Spirogyra Diversified Environmental Services. ND = no data. One difference between the two groups of data appears to be the counting of picoplankton (which was done by Spirogyra).