

WORCESTER CYANOBACTERIA MONITORING COLLABORATIVE

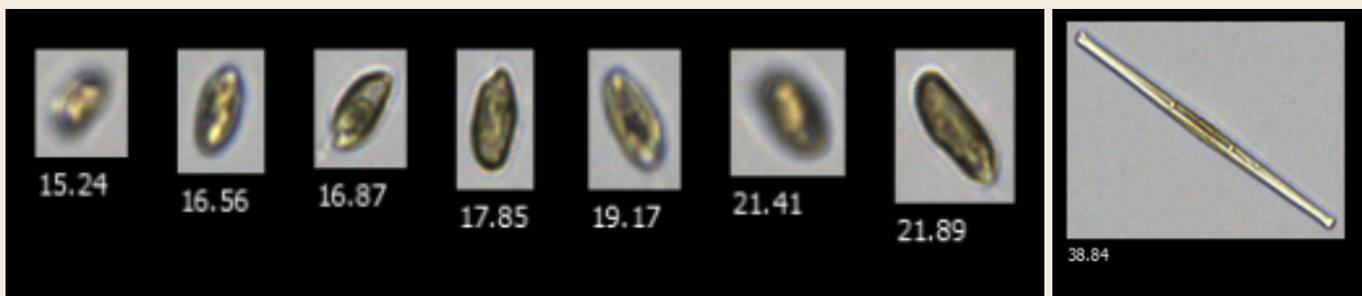
Stoneville Pond - October 2021

Sampling Conditions

October 16th was a partly cloudy Saturday at 70°F with a light breeze. There was no rainfall the day before the meeting. Rising fish and geese were observed along the shore.

FlowCam Findings from the GRAB Sample

The particle density at Stoneville Pond was 44 particles/ml in October, according to the FlowCam. The sample was dominated by cryptomonads, but in general had a very low particle count. There was no detection of cyanobacteria.



Cryptomonads

Synedra Diatom

Fluorimetry Data from the Integrated Tube Sample

We used the fluorometer to find the amount of phycocyanin in the sample, which we can use as an indicator of cyanobacteria. In October, Stoneville Pond had undetectable levels of phycocyanin, meaning that it is at low risk for a bloom. A pond becomes at risk for a bloom when it is at levels above 50 Au

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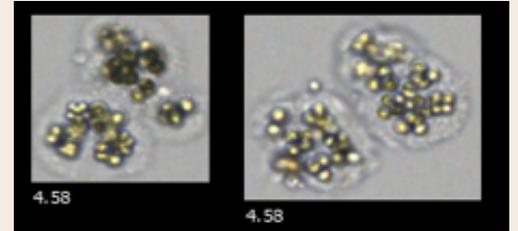
Stoneville Pond - August 2021

Sampling Conditions

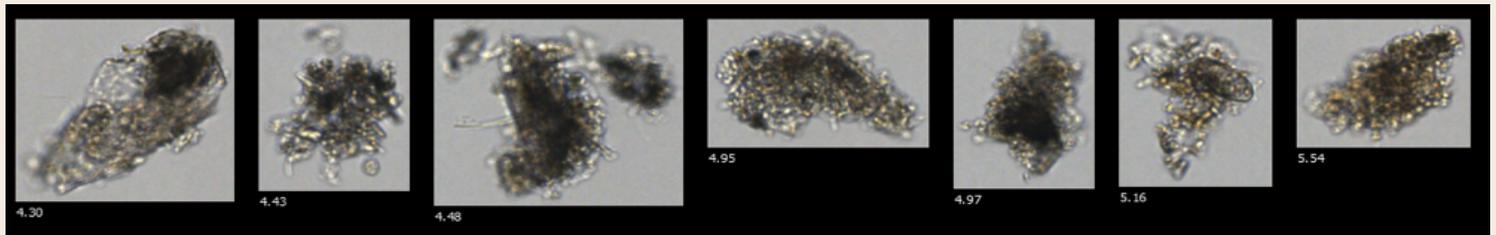
August 21st was a partly cloudy Saturday at 77F with a light breeze. There were 3.2 inches of rainfall two days prior to the meeting.

FlowCam Findings from the GRAB Sample

The particle density at Stoneville Pond was 141 particles/ml in August, according to the FlowCam, which is relatively low compared to other program lakes. The density was much lower than it was in July. The sample was dominated by organic debris, however, there were also some *Snowella* cyanobacteria present. However, based on the fluorometry data collected, we do not believe that the lake is at high risk for a bloom.



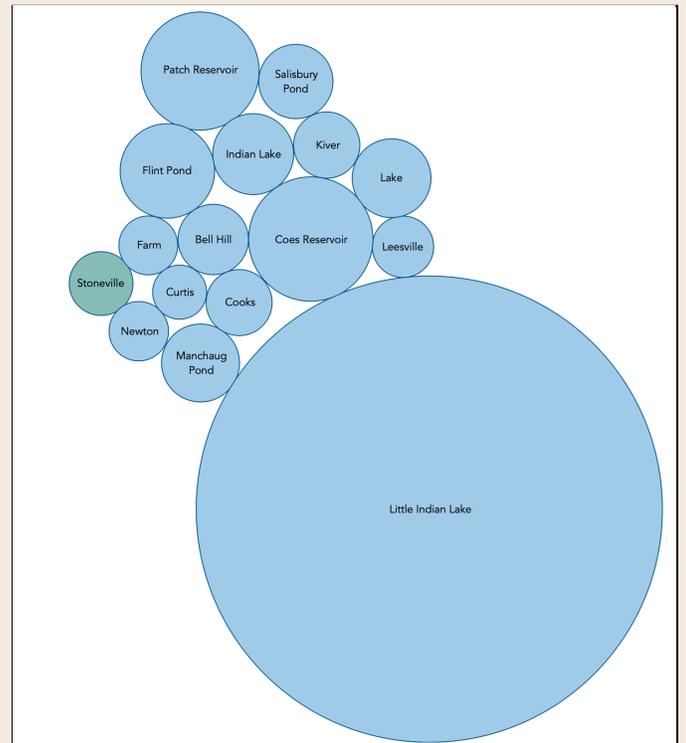
Snowella Cyanobacteria _____



Debris Particles

Fluorimetry Data from the Integrated Tube Sample

Using the fluorometer to find phycocyanin levels, the following graph represents the relative cyanobacteria pigment in each pond. Stoneville Pond rose from undetectable levels in the month of July to 12 Au in the month of August. A pond becomes at risk for a bloom when it is at levels above 50 Au.



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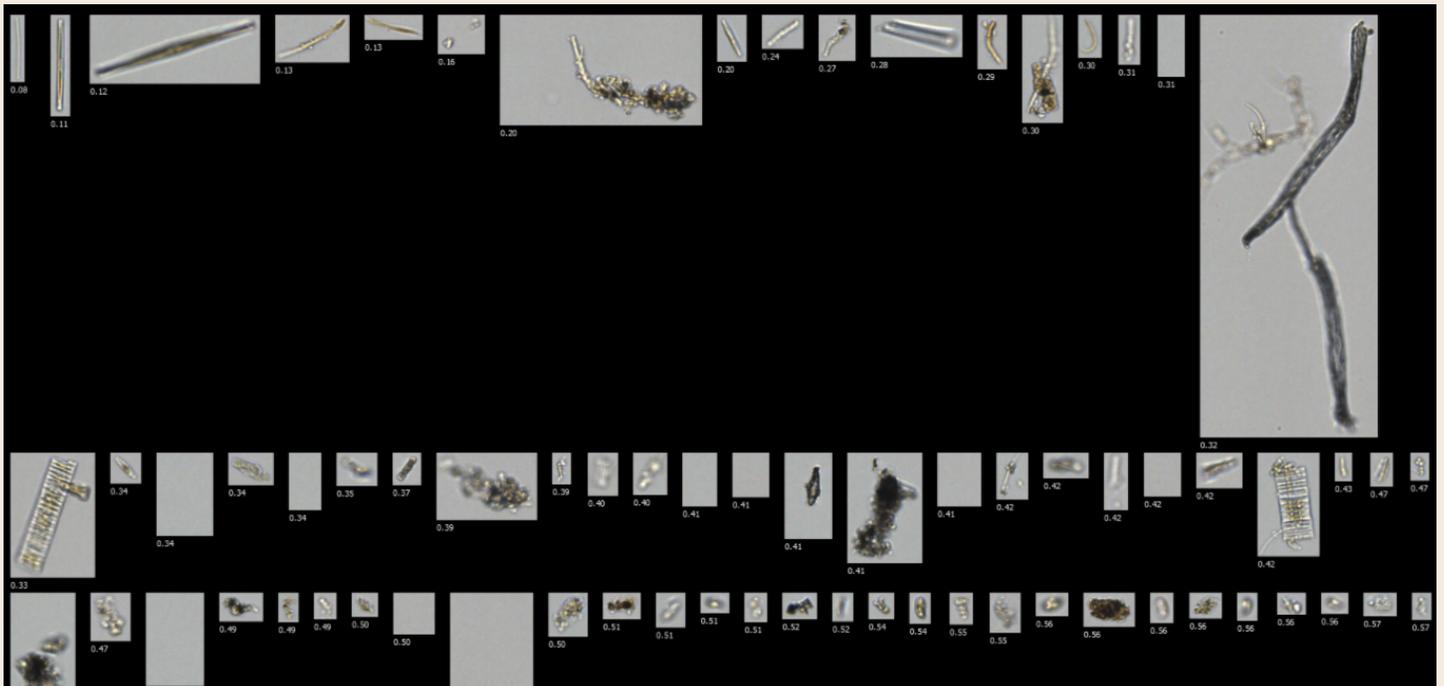
Stoneville Pond - July 2021

Sampling Conditions

July 17th was a partly cloudy Saturday at 73°F with no wind. Stoneville Pond's sample was taken along a shoreline at the southeast corner of the pond where .4 inches fell the day before. The water was still with little wave activity. The water was slightly turbid with a faint grassy smell. Bluegill and water lilies were observed in the water.

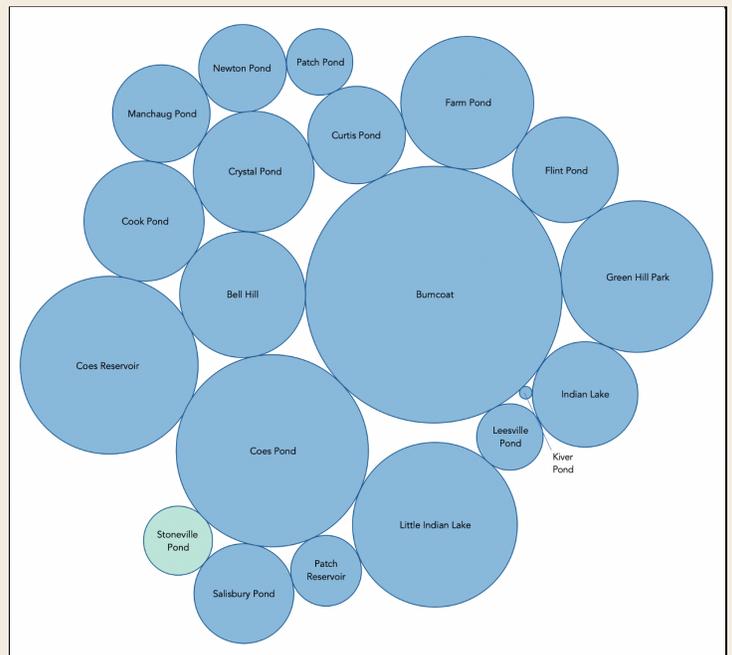
FlowCam Findings from the GRAB Sample

The FlowCam, an advanced microscopy technology, was run for all organisms in the water sample including green algae, golden algae, cyanobacteria, diatoms, and debris. The particle density at Stoneville Pond was 420 particles/ml in July, which is a decrease from 1,174 particles/ml in June. The figure provides a snapshot of some of the images that were seen by the camera at this lake.



Fluorimetry Data from the Integrated Tube Sample

Using the fluorometer to find phycocyanin levels, the following graph represents the relative cyanobacteria pigment in each pond. Stoneville Pond has remained at undetectable levels in the months of June and July. A pond becomes at risk for a bloom when levels rise above 50 Au.



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Stoneville Pond - June 2021

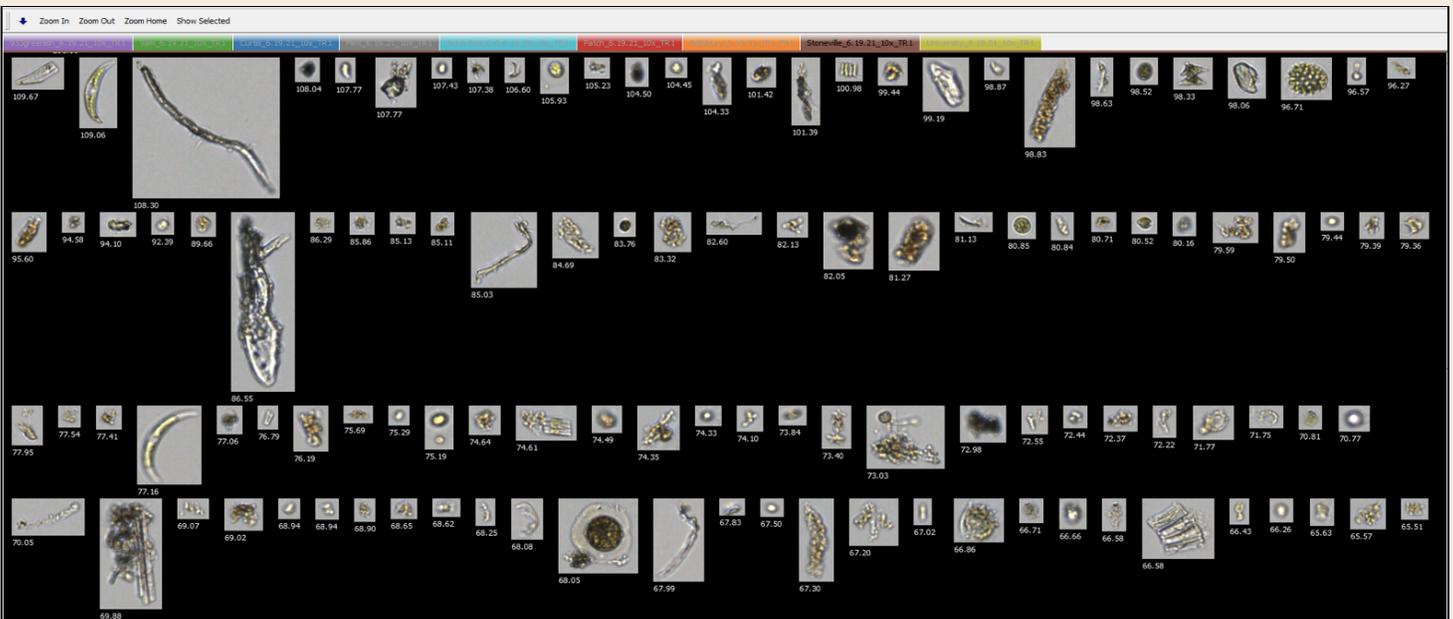
Sampling Conditions

June 19th was a cloudy Saturday at 69°F. There was a light breeze coming from the west direction. The Stoneville Pond sample was taken along a shoreline where the last rainfall was .25 inches two days before the sample was taken. The surface temperature was 72°F and the water was calm with little wave activity. The water had a faint grassy smell.

FlowCam Findings from GRAB Sample

The FlowCam is advanced microscopy technology that uses a high speed camera to photograph individual cells as they pass through a thin flow cell. The computer's image recognition technology will then sort the cells based on parameters used to distinguish cyanobacteria from other organisms, and eventually count them. While we still have some work to do to train the computer to cell counts, we were able to do an initial scan on June's samples.

The particle density at Stoneville Pond was 1174 particles/ml. Keep in mind that this number includes all organisms in the water sample, including green algae, golden algae, cyanobacteria, diatoms, and debris. Further work with the FlowCam will allow us to tease the groups apart, but for now, this figure can be used to help us understand how productive the water is. Here also is a snapshot of some of the images that were seen by the camera at this lake.



Fluorimetry Data from IT Tube

A spectrometer is a scientific instrument used to measure specific fluorescent components of a substance. Using this machine, we are able to measure the amounts of phycocyanin - a pigment specific to cyanobacteria - in a water sample. From these measurements we are able to determine the relative amounts of cyanobacteria in Worcester's waters. The graph provides the relative amounts of cyanobacteria found in the month of June. This month, only five water bodies presented with a distinguishable amount of cyanobacteria: Flint, Kiver, Quinsigamond, Green Hill, and Little Indian Lake. All other ponds, including Stoneville Pond, showed no distinguishable levels of phycocyanin.

