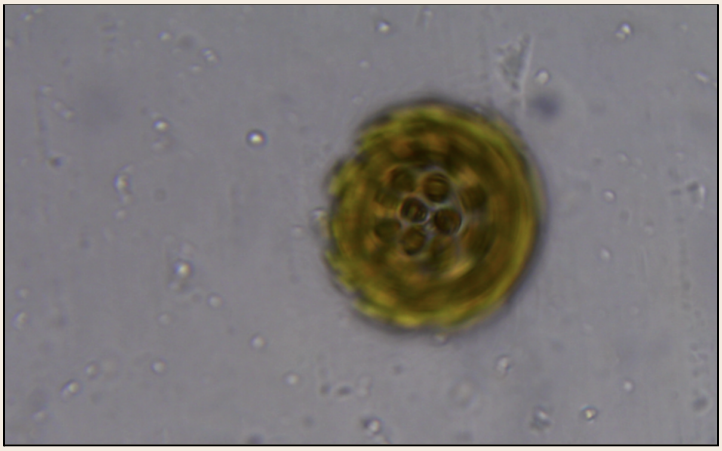
WORCESTER CYANOBACTERIA MONITORING COLLABORATIVE

Curtis Pond - August 2021

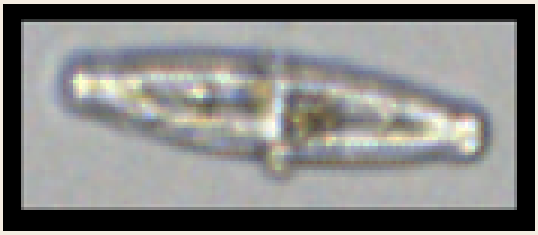
Sampling Conditions

August 21st was a partly cloudy Saturday at 82℉ with a light breeze. There were .2 inches of rainfall the day before the sample was taken, and 3 inches two days before the sample was taken.

Microscopic Findings from the Plankton NET



Synura Golden Alga



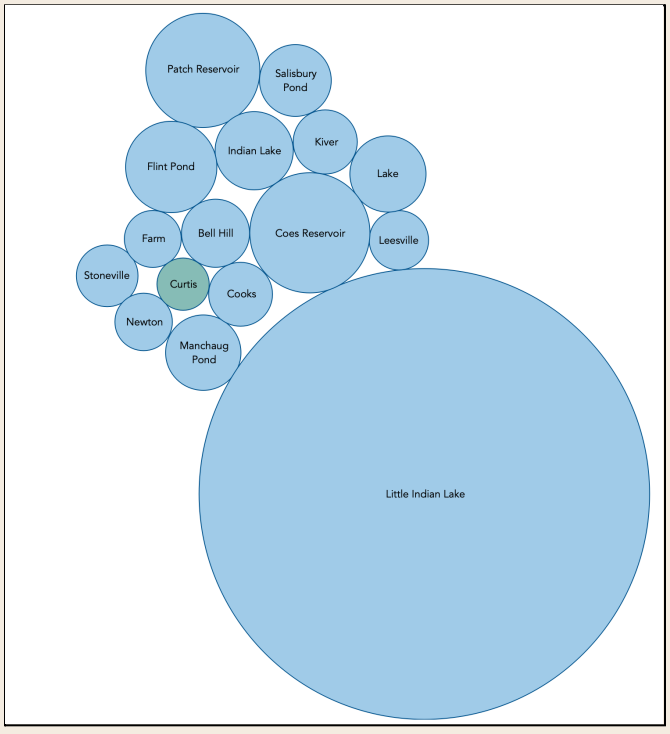
FlowCam image of a *Navicula* diatom

FlowCam Findings from the GRAB Sample

The particle density at Curtis Pond was 29 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. Imaged particles above included Navicula, which is a diatom, as well as organic debris. No cyanobacteria were detected.

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. Curtis Pond stayed at undetectable limits in the months of July and August. A pond becomes at risk for a bloom when it is at levels above 50 Au.



WORCESTER CYANOBACTERIA MONITORING COLLABORATIVE

Curtis Pond - July 2021

Sampling Conditions

July 17th was a partly cloudy Saturday at 73℉ with a light breeze. Curtis Pond's sample was taken at Notre Dame Cemetery across from Hawden Park, where there were .4 inches of rainfall the day before. The surface temperature of the water was 80℉ and the water was calm with little wave activity. The water was slightly turbid with a faint fishy smell. Sediment kicked up from the bottom of the pond was seen on the surface of the water. Pond scum and water chestnut were observed in the water, as well as a family of swans and early morning walkers.

Microscopic Findings from the Plankton NET on July 17th

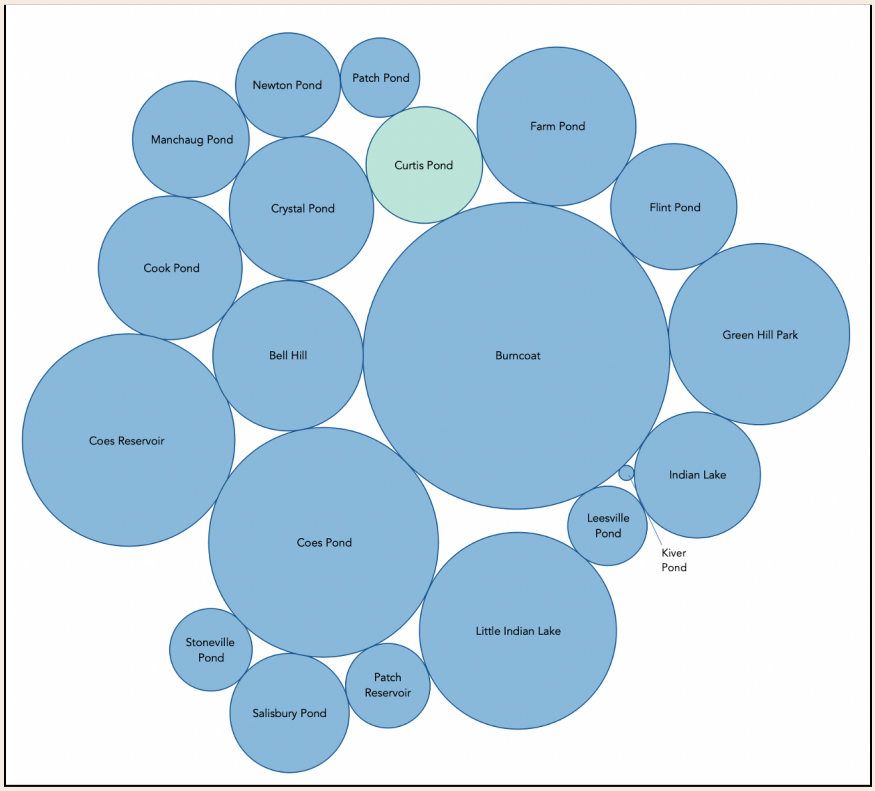
100x

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 Curtis Pond was 1274 particles/ml in July, which is a decrease from 1666 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. Curtis 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.



WORCESTER CYANOBACTERIA MONITORING COLLABORATIVE

Curtis Pond - June 2021

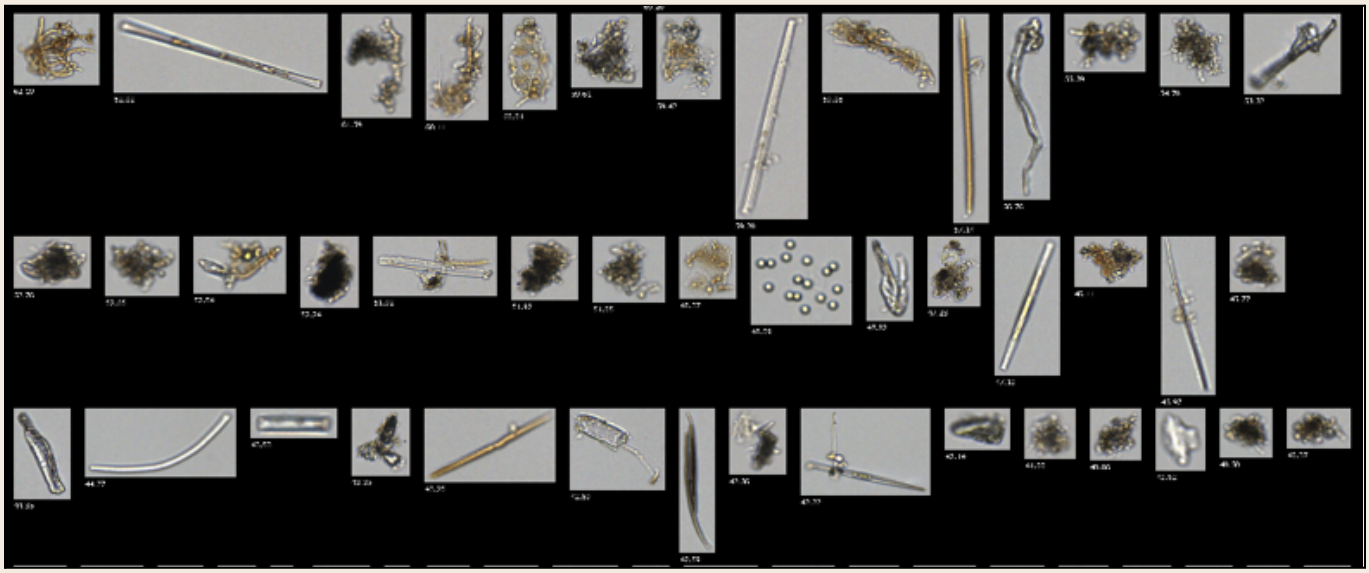
Sampling Conditions

June 19th was a mostly cloudy Saturday at 72℉ with no wind. The Curtis Pond sample was taken at the Greater Worcester Land Trust parcel, where there was no rain in the past 48 hours. The surface temperature was 68℉ and the water was calm with little wave activity. The water was turbid with a strong sewer smell. Sediment kicked up from the bottom of the pond as well as an oil-like sheen was seen on top of the water. Pondscum and water chestnut were observed in the water, as well as litter along the shore.

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 Curtis Pond was 1666 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 Curtis Pond, showed no distinguishable levels of phycocyanin.