WORCESTER CYANOBACTERIA MONITORING COLABORATIVE
Monthly Report
July 2018

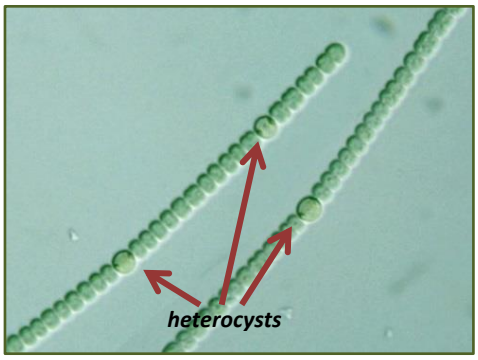
It's the heart of summer and the cyanobacteria are in full swing. This month we saw even more of a diversity of cyanobacteria in our samples, including several ones we had previously not identified here in Worcester. Increased access to equipment allowed volunteers more time at the scopes, and because of this, even more beautiful plankton photos.



Citizen scientists hard at work.

Sampling Weather: It was a bit cooler this month than last on sample day and air temperature was only about 73 degrees. However, the water had still heated up over the course of the month, to an average of 78 degrees. There had been no rain in the 24 hours prior to sampling. All samples were collected between 8:00 and 10:15 am.

General Findings: This month saw the greatest diversity of cyanobacteria yet. In addition to the Anabaena and Microcystis that we had been observing up to this point, we also saw some *Oscillatoria* in one of our lakes. *Oscillatoria* can be distinguished from *Anabaena* for its more square-like cells and lack of heterocysts. Like *Anabaena* and *Microcystis, Oscillatoria* can also produce microcystin, a cyanotoxin. In addition to cyanobacteria, we also found some new green algae, including *Eudorina*, which lives in colonies of 16, 32, or 64 cells, each containing a flagellum; and *Cosmarium,* which is characterized by its bi-lobed appearance.



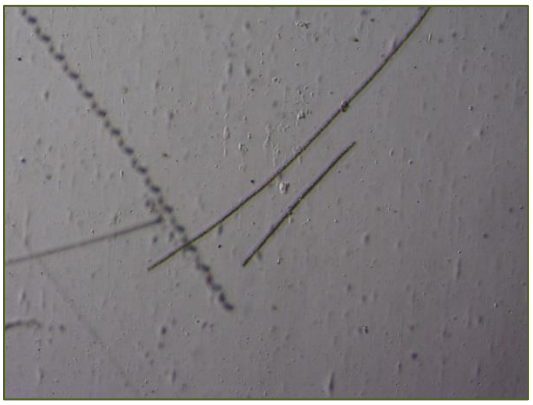
Some cyanobacteria use cells called heterocysts to capture gaseous Nitrogen from the air and convert it to a kind that can be used for its nutrition.

What it means: As the season progresses, cyanobacteria tend to become the most numerous planktonic organism. Given the hot summer and large amounts of rain that we experienced this year, it's no surprise that they came in full force. In August, we ended up treating three Worcester lakes for cyanobacteria: Indian Lake, which is treated annually, as well as Coes and Patch Reservoir, which were treated for the first time this year. Treatments at Indian Lake and Coes Reservoir were preventative, meaning that cyanobacteria levels did not reach advisory levels prior to treatment.

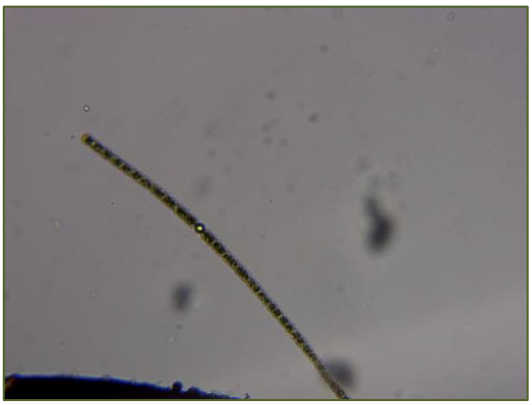
While cyanobacteria will probably come back, these treatments will hold us over at a lower density until the end of the summer and we will not have to worry anymore about the threat of blooms this season. Regardless, the City continues to monitor both cyanobacteria density, and for the first time, toxins, in its largest lakes and ponds. It will be interesting to see what kinds of cyanobacteria come back after these treatments at the end of August.

Thanks again to Joy Trahan-Liptak, and all the volunteers for their support!

CYANOBACTERIA



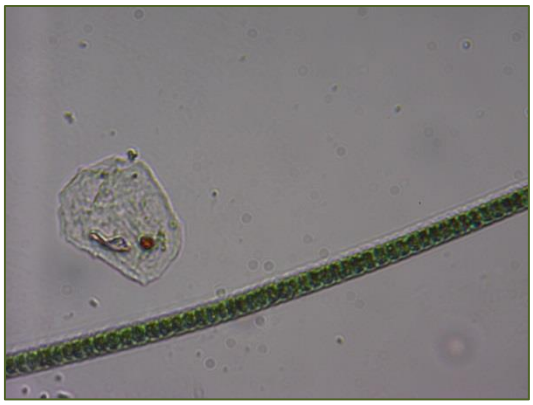
Anabaena at Coes Reservoir (4x)



Anabaena at Patch Reservoir (10x)



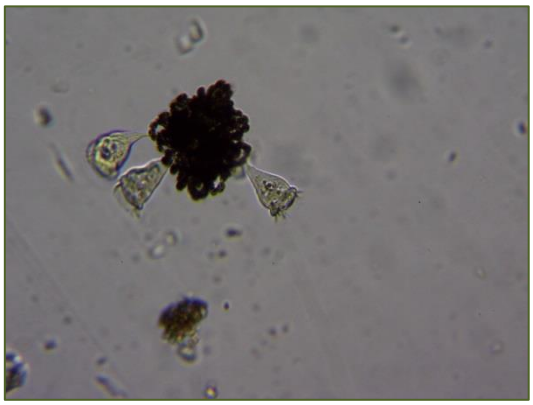
Oscillatoria at Patch Reservoir (10x)



Oscillatoria at Patch Reservoir (40x)



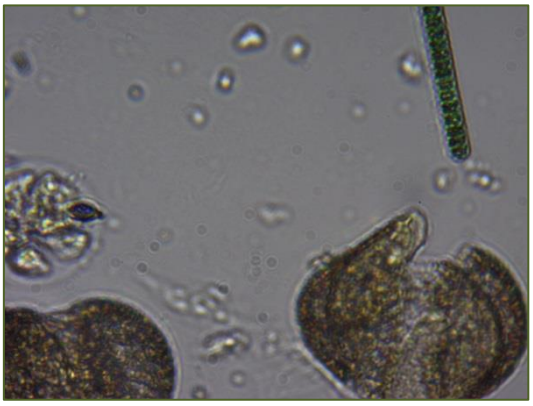
Anabaena at Coes Reservoir



Anabaena at Coes Reservoir (10x)

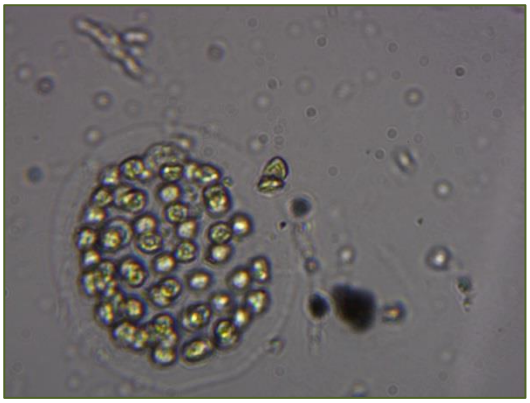
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CYANOBACTERIA CON'T

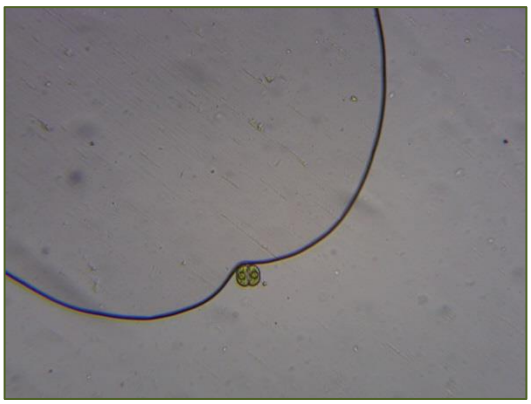


Oscillatoria (upper right) at Patch Reservoir (40x)

GREEN ALGAE



Possibly *Eudorina* at Patch Reservoir 40x



Cosmarium at Little Indian Lake (10x)



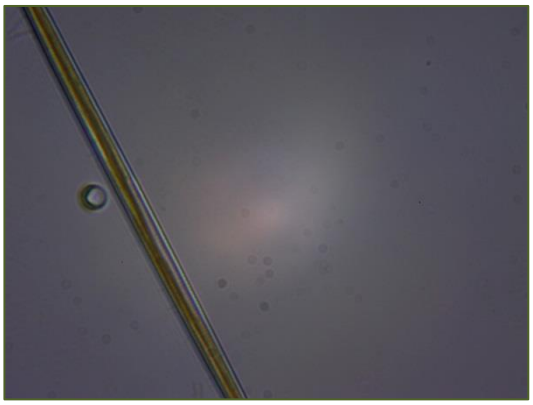
Cosmarium at Little Indian Lake (40x)

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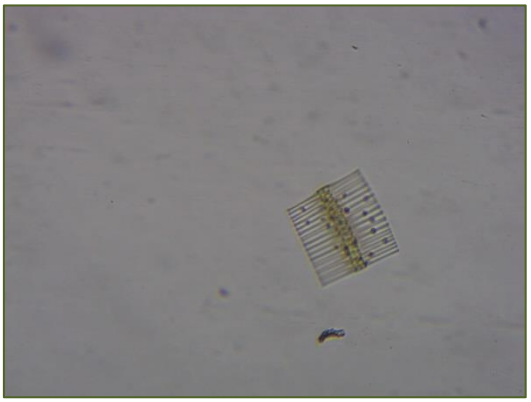
DIATOMS



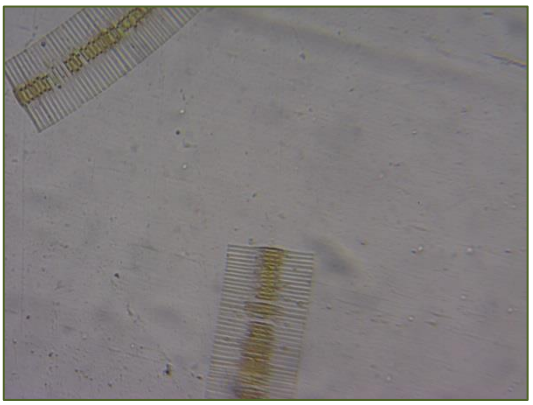
Synedra at Kiver Pond (10x)



Synedra at Kiver Pond (40x)

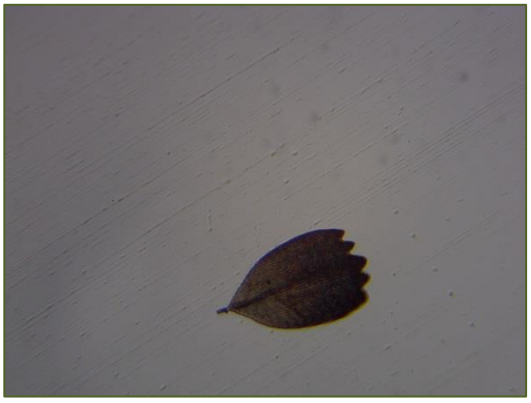


Fragilaria at Lake Quinsigamond



Fragilaria at Lake Quinsigamond

MISCELLANEOUS



Leaf litter at Indian Lake

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