WATER & WETLAND
LAKE, POND & WETLAND MANAGEMENT

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CALL/TEXT WITH ANY QUESTIONS!

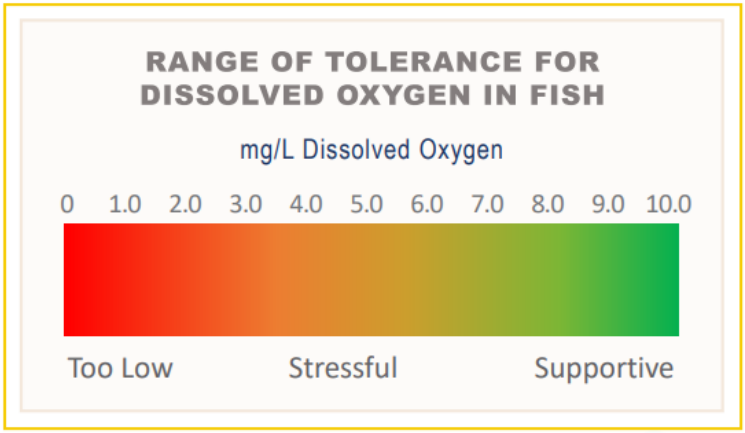
FIELD NOTES SUMMARY

Customer: Hop Brook Protection Association
Pond Name: Stearns Millpond
Site Location: Sudbury, MA
Date: 7/17/23

On 7/17/23, Senior Environmental Scientist, James Lacasse, made a visit to Stearns Millpond. The following services were completed during the visit:

Upon arrival at the site, a brief visual survey was conducted using visual observation. Plants documented during the survey are documented in the table below. (*) denotes an invasive species. Invasive species are non-native to the ecosystem and are likely to cause economic harm, environmental harm, or harm to human health. The purpose of the brief survey was to document the success of the previous treatment and to guide the current treatment, therefore a throw-rake was not utilized. A more in-depth survey will be conducted during the post-treatment survey. Clarity was reasonably high so in addition to species on the surface, several submerged plants were also documented including curly-leaf pondweed, elodea, coontail, etc. as listed below.

Species Identified	
Common Name	**Latin Name**
Water Chestnut*	*Trapa natans*
Curly-leaf Pondweed*	*Potamogeton crispus*
Waterlilies	*Nymphaeaceae*
Duckweed	*Lemna*
Watermeal	*Wolffia*
Common Waterweed/Elodea	*Elodea canadensis*
Coontail	*Ceratophyllum demersum*
Filamentous Algae	



While on-site, dissolved oxygen (DO) and temperature readings were collected using a calibrated YSI meter with optical sensor. Dissolved oxygen is the amount of oxygen in water that is available to aquatic organisms. DO is necessary to support fish spawning, growth, and activity. Tolerance varies by species, but the figure below provides a general range of fish tolerance (Source: epa.gov). Dissolved oxygen can be affected by many outside factors, such as: temperature, time of day, and pollution. Dissolved oxygen levels are typically lowest early in the morning. Healthy water should generally have concentrations of about 6.5-8+ mg/L.

Results from the visit are included in the table below:

Depth	Temperature (℃)	Dissolved Oxygen (mg/L)
Surface	24.0	7.98
1 Foot	24.0	7.42
2 Feet	23.2	6.54
Bottom	23.0	6.21

Secchi Disk Clarity	
Secchi Disk Depth (Feet)	To the bottom or to the vegetation throughout the Pond

A Secchi disk is a disk with alternating black and white quadrants. It is lowered into the water of a lake until it can no longer be seen by the observer. This depth of disappearance, called the Secchi depth, is a measure of the transparency of the water.

A follow-up treatment was conducted for the control of invasive water chestnut. Clearcast (imazamox), was paired with a non-ionic surfactant. The mixture was applied to live water chestnut via foliar application using low-volume calibrated spray equipment. This methodology allows for even coverage and distribution to the target water chestnut, while limiting any non-target impacts. Weather was also closely monitored prior to treatment to ensure a treatment date without rain or high winds.

Prior to the treatment(s), the shoreline was posted with neon pink signs noting the treatment, affiliated water use restrictions, and Water & Wetland contact information. The signs fulfill permit obligations for shoreline posting.

Additional Notes from the Biologist
The treatment targeted the growth of water chestnut (which was the second treatment performed in 2023). The majority of the water chestnut was scattered in trace to sparse densities, occasionally found in moderate densities in a small number of areas. The densest areas of water chestnut included the eastern cove and one area within the middle of the Pond. Other than those areas, the plants were more scattered. It is important not to confuse native growth at the surface with water chestnut growth, as it can be easily mistaken from looking at a distance. Seeds were noted just starting to form on the water chestnut plants, with portions of the population not yet forming seeds. The water level was slightly higher than average due to the previous heavy rainfall, which did not affect the treatment as the water chestnut was on the surface. A handful of water chestnut plants were documented growing within the water column. Based on our observations, we've scheduled a kayak survey for 7/27 to document the success of the program thus far. Based on this survey, we will determine if a third treatment may be necessary to gain the desired level of control. If this is needed, it will be scheduled for early August, prior to seeds dropping, and will be conducted at no additional cost.

As always, we will notify you prior to any upcoming visits, as applicable. Please feel free to reach out to us directly with any questions.

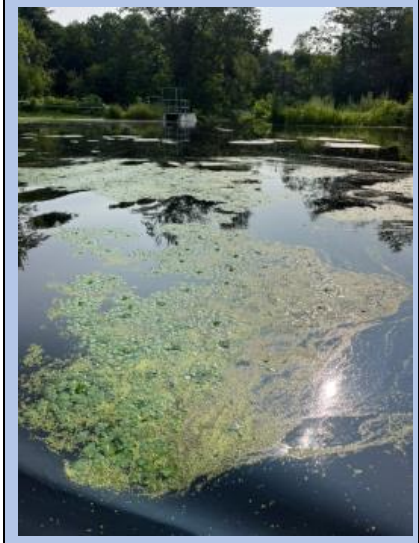
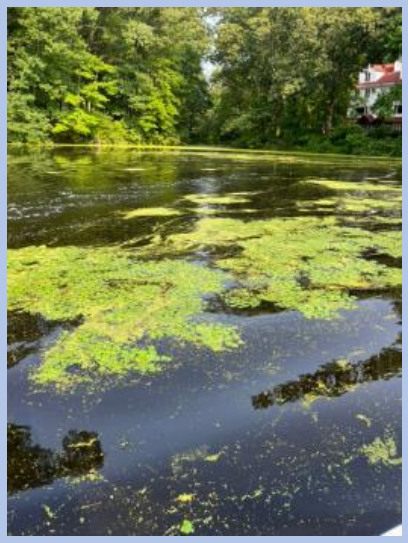
Photo 1	Photo 2	Photo 3
		

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Photo 4 	Photo 5 	Photo 6 

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