

Lower Bolton Lake



Bolton Town Hall
March 30, 2016

Northeast Aquatic Research

Threats to Lower Bolton Lake

- Proliferation of Southern Naiad



Threats to Lower Bolton Lake

- Severe Cyanobacteria Blooms



Photo: Friends of Bolton Lake

Threats to Lower Bolton Lake

- Invasive Aquatic Plants

- Variable-leaf milfoil
- Fanwort
- Curly-leaf Pondweed



Threat Update

- **Southern Naiad**

- Southern naiad was controlled in 2013 with a whole-lake application of the herbicide: Fluridone.
- Surveys of Lower Bolton Lake conducted in 2013-2015 have found very little southern naiad.
- This species is no longer considered a threat, but will be watched closely in the future.

Threat Update

- Cyanobacteria

- Cyanobacteria (bluegreen algae) are still a very real threat to Lower Bolton Lake.
- Blooms have occurred in 2013 and 2015.
- Increased phosphorus is the principal driver of plankton growth, but higher nitrogen and iron combine synergistically to cause very severe cyanobacteria blooms.

Threat Update

- Cyanobacteria

- Phosphorus = excessive levels,
 - >20ppb late spring, >30ppb mid-summer
- Total Nitrogen = occasionally excessive levels.
 - >1000ppb during bloom
- Iron = greatly excessive levels that increase in summer and fall.
 - >50ppb all the time

Threat Update

- Cyanobacteria

- **Phosphorus concentrations: Target thresholds are 20ppb in the short-term and 10ppb long-term.**
 - Internal phosphorus release has not been clearly demonstrated to occur but increases of phosphorus in the lake during summer, when there is little to no inflow, points to internal sources.
 - Storm-water phosphorus levels of >500ppb have been noted from several sites around the lake. Conveyance of these sub-basins needs to be mapped and investigated. Potential sources of the nutrients need to be identified and corrected.

Threat Update

- Cyanobacteria

- **Nitrogen concentrations.** Target thresholds are <500ppb in the short-term, and <400ppb long-term.

- Investigate the coincidence of spikes in total nitrogen concentration with occurrence of cyanobacteria blooms.

- **Iron levels: target thresholds are <100ppb short-term and <25ppb long-term.**

- At this time more information is need to explain why iron remains in the water column at 10x the normal levels.

Threat Update

- **Invasive Aquatic Plants**

- Variable-leaved milfoil has not been seen since the Fluridone treatment in 2013.
- Fanwort observed and treated in September 2013 in a tiny cove on the west shore has not been seen in the lake since that treatment.
- Curly-leaf milfoil
 - First seen in October 2014, spread quickly around the lake during the summer of 2015. An herbicide treatment was made of known beds in September 2015 to control spread curly-leaf pondweed.

Action Plan

- Continued close investigation and monitoring
- Prepare for a cyanobacteria bloom
- Prepare for naiad or invasive species treatment
- Continue drainage basin investigation
- Prepare for an Aluminum Sulfate treatment



Questions

