Chautauqua-Conewango
CONSORTIUM

Chautauqua Lake is Changing Kishbaugh-Johnson Findings

There is little evidence that herbicide applications are reducing the growth of Curly-leaf pondweed the following year, and these spring treatments may be impacting non-targeted native plants within and outside treated areas.

Eurasian watermilfoil and non-targeted native plant biomass, particularly common waterweed *(Elodea)*, appear to be changing in sync over time in both treated and untreated sites. Both plants decreased after a few years of treatment, then increased in the last few years. It is not yet clear if the recent increase in EWM and native plants represents the initial stages of recovery, normal variability, or if it will continue or be sustained.

a) Changes in Eurasian watermilfoil from herbicide applications are difficult to distinguish from control by insects or other non-herbicidal factors, including normal change from year to year.

b) The biomass of many native plants has decreased in herbicide-treated locations but has been more variable elsewhere.

The Chautauqua Lake HAB season has started earlier in recent years, corresponding to the start of the herbicide applications.

a) When herbicides kill plants, their nutrients are released to the water.

b) Chemical control of pondweeds in spring puts their nutrients in the water earlier, compared to natural die-off of these plants in mid-summer. Chemical control of Eurasian watermilfoil in summer puts their nutrients in the water while natural die-off would postpone that release to the fall, when HABs have a lesser impact on lake uses.

There are now more areas observed where there are no plants growing, making the lake more vulnerable to nutrients moving into the water, invasions from newly introduced invasive species, and reduced fishing locations.

Submersed aquatic vegetation sampling using SUNY Oneonta methodology shows similar or greater number of unique plant species or species richness (based on ~360 annual locations) compared to North Carolina State University species richness (based on ~900-1100 annual locations). Species richness would have been even higher in the SUNY Oneonta data if both programs surveyed the same number of sites. This discrepancy appears to be related to differences in rake toss methodology.

Using data from 2025 provided by North Carolina State University it appears that there is more Eurasian watermilfoil in treatment areas compared to untreated areas. This suggests that herbicides are not reducing vegetation abundance as expected.

These findings have produced three major themes for consideration.

Theme 1

Herbicide treatments have not been effective.

- Little long-term change in spring Curlyleaf pondweed levels
- Changes in Eurasian watermill and Elodea are similar over time in both treated and untreated areas
- Last year, amount of Eurasian watermilfoil was greater in treated areas than in untreated areas. (North Carolina State University data review and long-term findings in the Oneonta dataset)

Theme 2

Water quality impacts appear to be occurring due to:

- Shifting normal nutrient release from Curlyleaf pondweed natural die-off in early summer to the spring and Eurasian watermilfoil natural die-off in the fall to the summer.
- Nutrients that are available in the water to feed algal blooms for longer time periods.
- Additional nutrients available to feed algal blooms during time of human lake use.
- Creation of more denuded sites, potentially increasing nutrient release from sediments into the water, vulnerability to new aquatic invasive species and reducing fishing habitat.

Theme 3

Can an end point be established to have herbicide treatments stop?

- Pre-establish criteria or metrics for evaluating success or failure of the treatments.
- Establish desirable outcomes and optimization of lake uses linked to the treatments.
- Establish how and when permitting decisions would be evaluated to determine if goals have been met.
- Establish when the burden of proof to demonstrate benefits exceed costs will shift to the applicant.