

Northeast Aquatic Research, LLC

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West Hill Pond Association:

Your lake is probably one of the cleanest in CT. The typical summer water clarity is excellent. There are not many that I know of that rival the conditions of West Hill Pond.

However, very clean lakes are the most vulnerable to changes, they can only get worse they don't get better. It is the nature of a lake to accumulate nutrients. One of the reasons that West Hill Pond is in such great shape is because it has a very long retention time - essentially it is big and deep. However that means that almost all (probably 99%) the nutrients that enter the lake stay in the lake. The nutrients enter the lake through three main pathways, groundwater from septic systems, surface water from streams and storm water, and atmosphere from dry and wet fall. I suspect that the first two have increased at West Hill Pond and are continuing to increase. This will, over time, cause the lake to become more productive meaning that it will grow more algae and more aquatic plants. Both these plant groups focus on different nutrient pathways but the outcome is the same basically your lake will have lots of aquatic plants and much poorer water clarity. This may take a while - as in many years - but it can also happen quickly within a few years.

I mentioned that clean lakes are the most vulnerable - that is - it requires with very little additional phosphorus to cause the clarity to decline rapidly. I cannot overstress this point. Maintaining a lake in the condition of West Hill Pond is a very difficult process. This is because your job is first to identify the conditions that are normal so that you can see when the normal conditions have been exceeded. This is tedious because they will only be exceeded by what looks like an insignificant amount. But as I said, all the added nutrient stays in the lake, so any increase should be considered an incremental step down in condition. The difference between a mean phosphorus of 5 ppb and a mean phosphorus of 10 ppb is the loss of several meters of clarity, most likely going from 6 - 10 meter clarity to 2 to 6 meter clarity. Once this loss starts it almost cannot be stopped but the difficult aspect is actually detecting the change because the normal year-to-year variability is often larger than that hidden decrease.

I have explained in the past that most lake models use the spring phosphorus as a way of predicting annual load of phosphorus. The April value is a way of setting the initial growing conditions and it also represents the action of the watershed over the winter. The conditions in the lake in April also tend to be readily comparable from year to year so it is a good gauge of overall lake condition

From my point of view your lake is exceedingly under studied. Given the very high quality and the extensive shoreline development around the lake and the continued stress on the outer watershed area the lake is very vulnerable to changes.

Sincerely yours,
George W. Knoecklein, Ph.D.